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Opening Lecture
ON
SPASTIC AND SYPHILITIC SPINAL PARALYSIS.

Delivered at the Post-Graduate College, West London Hospital, on Oct. 8th, 1902.

BY DR. WILHELM ERB,
PROFESSOR OF CLINICAL MEDICINE AT HEIDELBERG.

GENTLEMEN,—I consider it a great honour to be allowed to deliver a lecture in this important institution which is consecrated to medical learning and practice, and before an assembly of young colleagues all eager for knowledge. I respond with joy and thankfulness to the invitation and I hope that I shall be sufficiently understood in spite of my imperfect pronunciation of English and perhaps unaccustomed and faulty rendering of the Latin and Greek technical terms used in our science. As you already know, I have chosen for my lecture a subject dealing with the pathology of the spinal cord, with which I have been occupied for many years and which has, as far as I can see, arrived after many difficulties at a definite scientific conclusion.

It is now exactly 40 years since I ended my studies and began my practical and scientific career under the eye and guidance of Nicolaus Friedreich who just at that time was engaged in his epoch-making observations on that disease of the spinal cord which still bears his name—hereditary ataxia ("Friedreich's disease"). I was therefore early initiated into the pathology of the spinal cord and nervous diseases generally. When I look back upon those days and compare the state of our knowledge of diseases of the spinal cord at that time with our perfected understanding of the present day I must say that probably no other branch of nerve pathology has undergone such extraordinary development and has advanced to the same degree as the pathology of the spinal cord. We are doubtless still far from the goal even in this branch as regards an exact understanding of its pathological-anatomical bearings, of its development and causes, and of its relations to the clinical symptoms observed; nevertheless, we may justly look with pride upon the standpoint which has been reached to-day in the pathology of the spinal cord. A glance at the handbooks and text-books on diseases of the nervous system of those days teaches us how incomplete our knowledge of their anatomy and pathology was, and how deficient our clinical distinction between the several forms of disease. One was just beginning to define and to study more closely the anatomical foundation of locomotor ataxia, and in the seventh decade of the last century men began everywhere to study clinically and anatomically the spinal cord in particular (I need only mention the names of Duchenne, Lockhart Clarke, Friedreich, Leyden, Westphal, and especially that of Charcot and his school, Vulpian, and others), which led to rapid strides in broadening and deepening our knowledge. On this point I cannot go into detail here. When I began my studies one certainly knew the diseases of the coverings of the spinal cord (meningitis, affections of the vertebræ), traumata, hæmorrhages, &c., somewhat more accurately, but the diseases of the cord itself very slightly. In these two main groups were recognised, to both of which the name of inflammation of the spinal cord (myelitis) was given; those forms which developed clinically with rapidity, often accompanied by fever, &c., and which showed themselves anatomically as essentially processes of softening, were classed together as acute myelitis; those forms which clinically began slowly and persisted for years, leading often to incurable disease, and which showed themselves anatomically as induration, sclerosis, grey degeneration and atrophy, were included under the term "chronic myelitis." It was only through elaborate methods of histological investigation and more exact clinical observation and diagnostic differentiation that a more extensive distinction and recognition of different morbid conditions were arrived at. So, taking chronic myelitis as an example, this one comprehensive term became gradually split up into the following: tabes, hereditary ataxy, transverse myelitis, slow compression, multiple sclerosis, amyotrophic lateral sclerosis, chronic anterior poliomyelitis, progressive spinal amyotrophy, bulbar paralysis, the simple and combined system diseases, and syringomyelia.

Of special scientific interest were those forms of chronic disease which are limited to symmetrical, definitely circumscribed regions of the cord, which conduct fibres belonging functionally and developmentally together, the so-called tracts or "fibre-systems"; hence they were, as you know, named "system diseases" and in latter days "neuron diseases." It is about two of these special forms of chronic myelitis which I have myself more clearly differentiated that I wish to speak to you to-day. The first is the so-called "spastic spinal paralysis—primary spastic paraplegia." In the year 1875 I described,[1] at a meeting of neurologists of South-Western Germany, a symptom group which appeared to me to be sufficiently characteristic when occurring by itself to merit introduction into nosology as a special form of disease. Only three symptoms constituted the same: a certain amount of feebleness (paresis) of the lower extremities, more or less muscular rigidity in the same region, and a marked increase of tendon reflexes. No other symptoms were present, no disturbance of sensation, of the sphincters, or of function of the generative organs, or nutrition of muscles or skin structures, no anomaly of the brain, cerebral nerves, or organs of sense. To this "syndrome," this symptom triad, which was doubtless referable to a disturbance in the spinal cord, I gave the name of "spastic spinal paralysis" and sought, though post-mortem evidence was lacking, to prove, on the basis of clinical and anatomical facts which were already known at the time and by suitable analogies, that a chronic, slowly ascending sclerosis (or grey degeneration) of the lateral columns of the cord, limited particularly, perhaps exclusively, to the crossed or lateral pyramidal tracts, would be found as the anatomical foundation of this disease. (At that time it was called "lateral sclerosis.") Only a short time afterwards Charcot, who had already published a series of similar, or nearly related, cases and facts, described the same symptom groups under the name of "tabes dorsal spasmodique" and arrived at precisely the same conclusion with regard to the probable anatomical foundation as I had done. In a short time our observations were confirmed and corroborated from many quarters. Many similar observations were published which, however, did not in all cases fulfil the strict diagnostic requirements laid down by me.

From other sides came contradiction, especially on the part of the Berlin School, whose most distinguished representatives could not associate themselves with our views but believed that the picture that I had described was simply a symptom group which could be found in diseases of the spinal cord and brain under the most varied conditions. Even if this was correct, the occurrence of the symptom triad by itself might still be supposed to depend upon a definite and typical anatomical basis. This was disputed because no post-mortem evidence of any sort was as yet forthcoming. In fact, such evidence was almost completely missing for the first few years; it even happened that in a series of cases diagnosed as spastic spinal paralysis the necropsy revealed the most diverse anatomical conditions which, of course, had this in common, that there was in each case a symmetrical lesion of the pyramidal tracts in some part of their extensive course, but not a symmetrical ascending degeneration of the same. In most instances one found multiple sclerosis, in others chronic hydrocephalus, tumours in the region of the decussation of the pyramids, syringomyelia, combined system disease, symmetrical cerebral diseases, &c. However, a critical examination of the symptom picture showed subsequently that no pure spastic spinal paralysis had been present but that errors in diagnosis had been made in most of the cases. Those cases which without doubt presented a pure primary sclerosis of the pyramidal tracts belonged to the amyotrophic lateral sclerosis and always showed accompanying chronic degeneration of the grey matter of the anterior columns. The positive post-mortem evidence, still scanty at the time, had not been considered as conclusive. Though a logical consideration of clinical facts pointed emphatically to the correctness of our assumption, opposition gained strength by regarding the anatomical

[1] Berliner Klinische Wochenschrift, 1875, No. 26; Virchow's Archiv, vol. lxx., 1877.

conditions found with too much scepticism. The matter was therefore left undecided for more than 20 years; other evidence had to be waited for which could not be collected easily when one considers that on the whole the disease is rare and extremely chronic and does not of itself lead to a fatal termination.

These facts have, however, at last arrived. First, the clinical picture became better recognised in its pure state by more accurate critical diagnosis and mixed cases caused by other conditions were eliminated. One was able to follow up individual cases through a number of years and to prove that the symptom picture remained absolutely constant; that not even a trace of any other symptom was added to the symptom triad. (A fourth symptom has of late been recognised—namely, the so-called Babinski reflex of the sole of the foot, which bears the closest relation to exaggerated tendon reflexes and is apparently just as constantly present as the latter.) I myself know of several cases which after 26, 20, and 18 years remain absolutely unchanged, so that there can be no doubt as to the individuality of the clinical picture. To these was added a group of exactly identical cases in which spastic spinal paralysis occurred as a family disease, evidently caused by hereditary influences in the instance of several members of a family, both in children and adults. The closest clinical analysis of these cases showed beyond doubt that the pure symptom picture of spastic spinal paralysis, and that picture alone, was present and that other appearances never showed themselves. And just for these cases has decisive post-mortem evidence been lately found; each examination showed as the main and most important feature *s.* sclerosis of the posterior lateral tracts, especially the pyramidal tracts. As a matter of fact we are now in possession of a whole number of post-mortem proofs, both for the ordinary as well as the family form of spastic spinal paralysis, leaving no room for doubt that this disease exists and that it has a constant anatomical condition for its foundation. I will not dwell on the older post-mortem findings, though these gain importance in the light of our newer experiences: I allude to the first observation made by Charcot in the year 1865 which, of course, dates from a time when the methods of investigation were still imperfect; also those of Dreschfeld (quite typical because the lesion in the anterior columns was trifling) and of Stoffella (who, however, only made a microscopic examination). But I mention only those which are indisputable and will stand any criticism.

CASE 1.—Minkowski.[2] Clinically there was the pure picture of spastic spinal paralysis. Anatomically there was a nearly pure sclerosis of the crossed pyramidal tracts, with slight changes in the direct cerebellar tracts.

CASE 2.—Von Strümpell.[3] The patient was a man, aged 63 years, who had a brother suffering from the same disease. Clinically the case presented the typical picture of spastic spinal paralysis for at least 20 years. Anatomically there was a typical degeneration of the pyramidal tracts from the lumbar to the cervical region, there being in addition a slight degeneration of the direct cerebellar tracts and a still more trifling degeneration of the tracts of Goll in the upper part of the spinal cord. Strümpell would, on this account, reckon the affection among the combined system diseases, but the degeneration of the pyramidal tracts is certainly the most essential lesion and is to be regarded as primary.

CASE 3.—Déjerine and Sottas.[4] Clinically this was a pure case of spastic spinal paralysis of 25 years' duration, death occurring from pneumonia in the sixty-sixth year. Anatomically there was marked sclerosis of the pyramidal tracts from the lumbar to the cervical cord, with slight partial sclerosis of Goll's tracts in the cervical region, otherwise everything being normal.

CASE 4.—Donaggio[5] (1897). The patient was a man, aged 61 years. Clinically there was for two and a quarter years the typical picture of pure spinal spastic paralysis; death resulted from pneumonia. Anatomically there was pure, exclusively primary degeneration of the pyramidal tracts from the lumbar to the cervical region (a quite typical case).

CASE 5.—Friedmann.[6] The patient was a male, aged 52 years. Clinically for two years there was the pure picture of a spastic spinal paralysis (trace of disturbed sensation present?). The patient suffered from apoplexy, death resulting from pneumonia. Anatomically there was classical primary degeneration of the pyramidal tracts only, there being a trace of degeneration in the direct cerebellar tracts as well as endarteritis obliterans of the basilar artery.

CASE 6.—Von Strümpell.[7] Clinically a picture of pure spastic spinal paralysis was present, death occurring after the disease had lasted for 35 years. Anatomically there was quite typical moderate degeneration of the pyramidal tracts from the lumbar cord to the region of the pyramids. The direct cerebellar tracts were scarcely affected and the tracts of Goll very slightly above in the cervical region. The anterior columns and brain were completely free (belongs to the hereditary form).

CASES 7 and 8.—Bischoff.[8] The patients were two brothers who from their eighth and tenth years respectively suffered from spastic rigidity of the limbs, ascending slowly from the legs to the head. Intellectual development was poor, but otherwise clinically the typical picture was one of spastic spinal paralysis. Death took place from phthisis after about 20 years' duration. Anatomically there was a typical degeneration of the pyramidal tracts, extending upwards beyond the medulla oblongata but not farther. The direct cerebellar tracts and Gower's bundles were all but free. Goll's tracts were extremely affected. In the grey matter of the anterior columns there was atrophy of the ganglion cells (evidently occurring towards the end of life). The author calls the change in the spinal cord primary tract degeneration (quite analogous to the condition found by Strümpell) and holds that thereby the existence of an infantile form of hereditary spastic spinal paralysis has been proved.

CASE 9.—Ida Democh.[9] The case is clinically and anatomically somewhat complicated. Clinically there was a typical picture of spastic spinal paralysis, combined with signs of chronic alcoholism, pains, tremors, &c. Anatomically there were primary degeneration of the pyramidal tracts, slight degeneration of the tracts of Goll, and congenital hydromyelus in the lumbar and dorsal cord; the direct cerebellar tracts were free; nevertheless, as proved by the author, this can be termed a case of primary degeneration of the pyramidal tracts in spastic spinal paralysis.[10]

CASE 10.—And almost while I speak another quite typical case with a necropsy has come on record. Dr. Kühn described it a few months ago[11] and von Strümpell made the microscopical examination of the spinal cord last week; he was kind enough to allow me to speak of this case in my lecture. He found—clinically it was a quite typical case of spastic spinal paralysis—an essentially characteristic primary degeneration of the lateral columns. I am very glad to bring this last and most evident case to your knowledge.

The result of these facts may be summed up as follows: In all cases there was a pure lesion of the pyramidal tracts and in addition there were a slight lesion of the direct cerebellar tracts and trifling sclerosis of the tracts of Goll. That these latter are points of secondary importance is clear to all who understand the subject; they cause no clinical symptoms, as far as we know, and occur in the most varied circumstances without our knowing anything about them. One is not, therefore, justified in estimating their importance too highly, just as we cannot be prevented from regarding tabes as a sclerosis of the posterior tracts, although in many cases of tabes changes are also found in the lateral and anterior tracts or in the grey matter; so our estimation of the proper value of the more important changes in the pyramidal tracts is not influenced by the presence of these slighter changes in the tracts of Goll or, besides the pyramidal tracts, in the lateral tracts. This is all the more so considering that it is generally a question of long-standing disease in elderly persons suffering from severe illness in whom such changes are usually observed. It therefore appears certain that in cases of pure spastic spinal paralysis there is present as the essential change a sclerosis of the posterior segments of the lateral spinal tracts, and particularly in the pyramidal tracts, more or less uncomplicated and exclusive. I am therefore persuaded

[2] Deutsches Archiv für Klinische Medicin, Band xxxiv., 1884.
[3] Archiv für Psychiatrie und Nervenkrankheiten, xvii., 1886.
[4] Archives de Physiologie Normale et Pathologique, 1896, p. 630.
[5] Rivista Sperimentale di Freniatria, vol. xxiii., 1897.
[6] Deutsche Zeitschrift für Nervenheilkunde, Band xvi., 1899.
[7] Neurologisches Centralblatt, 1901, p. 630.
[8] Jahrbücher für Psychiatrie und Neurologie, Band xxii., Wien, 1902.
[9] Archiv für Psychiatrie und Nervenkrankheiten, vol. xxxiii., 1900.
[10] Strictly the case described by Strümpell in 1894 (Deutsche Zeitschrift für Nervenheilkunde, Band v., p. 225) as a primary isolated system degeneration of both pyramidal tracts, showing only slight transitions to amyotrophic lateral sclerosis, might come under this head.
[11] Deutsche Zeitschrift für Neurologie, Band xxii., p. 144.

that the existence of spastic spinal paralysis, clinically as well as anatomically, has now been amply established and that this disease must occupy a well-deserved place among the chronic system diseases of the spinal cord.

There is no need of a lengthy description, but only of a short, concise sketch of the disease. The complaint is on the whole a rare one, much rarer than tabes, and not as common as I and others thought at first. It usually begins slowly and insidiously, rarely in a more acute fashion, with some sense of weight, dragging and slight feebleness in one or the other leg, without pain, or at most only pain or fatigue after prolonged exertion, without, or with only slight, transient paræsthesia of the legs, and without any other symptom except perhaps some backache. The condition progresses just as slowly as it commenced; the legs become stiffer and heavier, the gait progressively more laboured, dragging, and distinctly spastic; occasional muscular cramps and contraction of the legs may occur, but nothing else. Objective examination reveals, after the disease has existed for some months, or even years, the characteristic symptom triad: a certain weakness and awkwardness of movement of the legs, very slight, so that often for a long time nothing in the way of paresis, much less paralysis, is present; no ataxy—but far more distinct and prominent are the spasm and rigidity of the muscles, ranging from slight elastic resistance during passive movement to marked, stiff contracture temporarily increased by energetic muscular action, necessitating forced extension of the legs, &c.; and thirdly, the well-marked exaggeration of the tendon reflexes (patellar clonus, ankle clonus, reflexes from periosteum and fasciæ and numerous tendons which normally scarcely yield any reflex), with involuntary clonus of the foot (spinal epilepsy) while the patient is sitting. To these must be added the pathological plantar reflex (slow dorsiflexion of the great toe when the sole is slightly stroked—valuable evidence of organic changes in the pyramidal tracts) recently described by Babinski. From the foregoing—weakness, muscular rigidity, and exaggerated tendon reflexes—we have resulting the characteristic "spastic gait," the details of which (dragging of the rigid and closely adducted legs, scraping the ground, tendency to walk on the toes, and tilting movement of the trunk at each step), I need not describe at this meeting. As an early sign of the gradual ascending of the process to the arms one often finds already an increase of the tendon reflexes in the arms. This is all. Otherwise there is nothing to be found—no disturbance of sensation, no Romberg's sign, no change in the function of the bladder, bowel, or generative organs, no muscular atrophy, no change in their electrical reaction, no ataxy, no disturbance in the pupils, cerebral nerves, speech, psychical functions, memory, &c. Indeed, you *may* not find anything of this kind when the case is not one of pure spastic paralysis.

The disease progresses as slowly as it began—endlessly for years and decades. I know of a case which has already lasted for 26 years without undergoing any change at all and without the patient having completely lost the power of walking. Should the case progress more rapidly the patient soon becomes altogether stiff and helpless. Extreme contractures prevent any movements; the arms become affected, also occasionally the back, neck, and head, so that the patients are in the most miserable plight and finally die in a marasmic condition.[12] But, generally speaking, the disease is not directly fatal and there are less distress and suffering (no pain, bladder disturbance, decubitus, disturbances of the mind, or psychical anomalies) than in most of the chronic progressive spinal affections. The prognosis is therefore self-evident.

The picture of the family, or hereditary, form of the disease, occurring in groups in several members of one and the same family and in several generations, both in early childhood and in adults, is essentially the same. Repetition is unnecessary.[13] The diagnosis presents no difficulties as a rule, especially when the cases are under observation for some time, if one bears in mind that the above-mentioned three or four symptoms are the only ones and that no other symptom is permissible. As soon as any other symptom, however insignificant, appears (pain, paræsthesia, bladder trouble, disturbances in the eye muscles, tremors, ataxy, or the like) the diagnosis cannot be maintained. In this way the disease can, as a rule, easily be distinguished from chronic myelitis, compression of the spinal cord, combined system diseases, cerebral diplegia, syringomyelia, amyotrophic lateral sclerosis, and syphilitic spinal paralysis. There is only one disease which sometimes causes much difficulty and may be recognised only after some time, and that is multiple sclerosis; in this the three symptoms, or more correctly the four, of spastic spinal paralysis are not uncommonly present alone, but at last the other symptoms follow (nystagmus, tremors, bladder trouble, &c.). Therefore with this disease special care is necessary.

About the etiology of spastic spinal paralysis I can only say a little; it is really still completely in the dark. Apart from the hereditary influences the blame is thrown upon chills, overwork, psychical shock, trauma, and also syphilis (perhaps the last more often than was at first believed) and, lastly, certain poisons, lathyrus, pellagra. About these nothing certain is known. To my mind, the outcome of this study seems clear. Spastic spinal paralysis exists as a form of disease definitely characterised by the oft-named four symptoms and will not again disappear from the pathology of the spinal cord. The anatomical lesion underlying is a grey degeneration of the lateral tracts which is not always confined to the pyramidal tracts alone, but is mainly and most strongly marked in these.

It is impossible to consider more closely the many interesting scientific questions respecting neuron diseases which arise in this connexion. I am only anxious to fix in your minds the clinical and pathological-anatomical picture; this must suffice for to-day.

The growing experience of the last 20 years has, of course, added to our knowledge of this and other similar spinal diseases. On this account I was prompted in the year 1892 to differentiate a second clinical form of disease which, indeed, presented a strong resemblance to spastic spinal paralysis but differed from it in a definite and characteristic way, as also from other symptom pictures already known. It was proved that it occurred almost exclusively in individuals who had previously suffered from syphilis. I have called it[14] "syphilitic spinal paralysis." It often occurs relatively early, during the first two to six years after syphilitic infection, but can also develop much later, after 15, 20, or more years. Briefly it is characterised by this, that besides the typical picture of spastic spinal paralysis there are always a disturbance in bladder function and usually a slight, but always demonstrable, subjective and objective disturbance of sensation. The tendon reflexes are markedly increased; the rigidity of the muscles, however, is comparatively slight when contrasted with the apparently very marked spastic gait. There are no marked pains, no severe disturbances of sensation, no atrophy of the muscles, and no disturbances of the brain, the cerebral nerves, the eyes, the pupils, &c. The onset of the disease is usually quite chronic and insidious, sometimes it is more rapid, improvement and long spells of standstill are possible, but death may occur after a comparatively rapid course in a few years. My pupil, Dr. Kuh,[15] has collected in a large paper my own and many other observations upon syphilitic spinal disease which appear to belong to this class and has discussed them at length. It seems to me after further experience that a still finer sifting and subdivision might be possible and useful in this series.

Since post-mortem evidence obtained from well-marked and typical cases was not obtainable by myself or others I drew up a few assumptions with regard to the anatomical foundation of the disease. It seemed to me to be most probable that it was not a case of a complete transverse lesion or of a combined system disease, but only of a partial, symmetrically situated lesion in both halves of the cord in the dorsal region; it seemed to be chiefly in the posterior lateral tracts, with partial involvement of the grey posterior columns and the white posterior tracts. As to the nature of this lesion, whether a specific syphilitic infiltration, a syphilitic infection of the vessels, or a degenerative change, I did not dare to put forward any definite opinion. In this instance also I had many adherents and many opponents, as was the case with spastic spinal paralysis. Highly experienced practitioners

[12] In certain specially rapid cases—Strümpell has described some of this kind—the spastic paresis and extreme contracture attack even the arm, neck, and face muscles, but the onset of muscular atrophy and the rapidly fatal course of these cases should place them among those of amyotrophic lateral sclerosis.

[13] See the cases of Bernhardt, Strümpell, Tooth, Krafft-Ebing, Nowmark, Erb, and others.

[14] Neurologisches Centralblatt, 1892, No. 6.

[15] Deutsche Zeitschrift für Nervenheilkunde, Band iii., 1893.

working at institutions for the treatment of syphilis agreed and contributed whole series of similar cases; others declared that there was nothing new in the matter, but that it was simply a gummatous myelitis or syphilitic disease of the vessels, or merely the "well known meningo-myelitis syphilitica." What astonished me most was this latter assertion in the case of patients in whom there was not even a trace of meningitis or root neuritis. Such knowledge can, of course, only ripen gradually, and time only can yield by degrees the necessary proofs which in the cases of such a disease as this depend a good deal on chance.

I wish to emphasise, gentlemen, that still further clinical observation is needed, and a more thorough sifting of individual cases, and a more exact separation of these from others which simulate them or are closely allied to them, just as was needful in the cases of spastic spinal paralysis. At the same time, gentlemen, you must always bear in mind that in syphilis—a disease presenting such an incredible number of different forms—combinations, variations, and transitions are especially frequent and are even to be expected with certainty. It is therefore a question of working out with precision and fixing this definite symptom group; it will then be recognised also occasionally in complicated cases (of spinal and cerebral syphilis).

This problem seems to me to have been already in some measure solved. One must admit that the symptom picture, as I am about to describe it, is subject to variations in intensity and clearness. One cannot expect, at least in a syphilitic disease, that this should be always manifested in the same way and to the same degree. Nature does not deal in schemes and diagrams; every separate individual and each case have their own peculiarity, and just as we find that in locomotor ataxia the picture is not always identical and uniform—you know how extremely variable it is—so we cannot expect to find uniformity in syphilitic spinal paralysis. It would be essentially pedantic to lay down hard-and-fast rules here, but still I think that the picture as I drew it at the first still holds good completely. Should such a patient enter your consulting-room, gentlemen, you would notice his laboured gait, with tightly-closed stiff legs, his feet sticking to the ground, scraping at each step, often walking with the aid of a stick - a picture of extreme spastic gait. On examination you would find weakness, more or less well-marked paresis of the feet and legs, the muscular rigidity being often only slight compared with the change in the gait, but sometimes sufficiently strongly marked. You would find, moreover, an enormous increase in the tendon reflexes, patellar clonus, ankle clonus, and usually the Babinski reflex; on the other hand, there would be usually only slightly marked subjective and objective disturbance of sensation, which might be discovered only on closer examination. There would be more or less weakness of the bladder, especially incontinence, but also retention, of urine, so that the patient could not avoid the use of the catheter and the urinal, and usually there would be some weakness of the generative organs. In the arms there usually would be nothing except slight increase in the tendon-reflexes. The head and the cerebral nerves, the pupils, the eye muscles, the speech, the intellect, &c., and also the vertebral column, would be unaffected. In a case presenting such a picture you might at once think of syphilitic spinal paralysis and on questioning the patient you would also learn that he had some time ago or recently been the subject of specific infection, more or less severe and that he had been treated more or less thoroughly; that his complaint began slowly and insidiously, usually first in the legs, with gradually increasing weakness and stiffness; that he got tired sooner; and that there was usually no pain whatever, but all kinds of paræsthesiæ. In some cases, not infrequently, bladder trouble is the first, and for a long time the only, symptom; in all cases bladder weakness occurs in greater or less degree during the course of the illness. Otherwise the patients have usually nothing of importance to tell. Sometimes they give as an additional cause some injury, cold or excess, or severe psychical shock. Occasionally they describe the illness as having come on more rapidly, almost acutely, followed by improvement and subsequent relapse. Even in quite chronic cases a rapid, almost sudden, exacerbation sometimes occurs, leading soon to paraplegia with marked anæsthesia, decubitus, cystitis &c. It is questionable whether these cases should be included here although such a sequence of events has its analogy also in tabes, in which disease a rapid onset and rapid decline are not uncommonly seen.

What anatomical condition corresponds to this disease? This was for a long time doubtful but seems now to have been cleared up to a certain extent. It has come as a surprise that in a whole series of typical cases there was not the picture which one expected to find—namely, a specific myelitis or arteritis or gummatous infiltration, but rather that of a combined system disease, that is to say, a primary grey degeneration in various fibre systems of the spinal cord, chiefly in the posterior half of the lateral tracts, the direct cerebellar tracts, and the tracts of Gowers; then in the posterior tracts, the tracts of Goll, and partly also in the postero-lateral tracts (Burdach's tracts). This was first clearly demonstrated by Nonne, but there are earlier observations of the same kind and of equal value; let me enumerate them briefly. The oldest is an observation made by Westphal[16] in the year 1880. A man, aged 38 years, suffered three years after syphilitic infection from typical symptoms of syphilitic spinal paralysis (erroneously called "spastic spinal paralysis" by Westphal). Death took place after four years through cerebral softening. There was found a pure typical combined system disease (pyramidal tracts and direct cerebellar tracts and, to a less extent, the tracts of Goll) without any other changes in the spinal cord.

Another case is that recorded by Eberle,[17] which was curiously enough also described as one of spastic spinal paralysis, though it gave the typical picture of syphilitic spinal paralysis. The disease set in at the age of 46 years. The patient had had syphilis 18 years previously; he died after about 10 years' duration of the disease. There was found quite a typical combined system disease (pyramidal, direct cerebellar, Goll's and Burdach's tracts, most marked in the lateral tracts)—nothing else.

Quite analogous is a case of Nonne,[18] the patient being a man, aged 51 years, who had acquired syphilis at the age of 32 years—a case of quite characteristic syphilitic spinal paralysis. In this case death ensued after five years from carcinoma. There was found typical combined system disease (pyramidal, direct cerebellar, and Goll's tracts, the latter affected only slightly). Otherwise nothing abnormal was observed in the spinal cord.

Again, a case was published in the year 1891 by Williamson[19] in which there was occurrence of syphilitic spinal paralysis several months after syphilitic infection, with somewhat unusual beginning (and repeated acute attacks of paralysis)—then, however, the usual picture. Death occurred after nine years' duration of the disease. One found well-marked combined system disease in the pyramidal tracts throughout the spinal cord; in the direct cerebellar tracts and Goll's tracts only in the upper dorsal and cervical regions of the cord. The postero-lateral tracts were completely free. Nowhere was there any trace of transverse myelitis or meningitis worth mentioning.[20]

Here we have already four cases of syphilitic spinal paralysis in which an absolutely typical combined system disease was found post mortem. To these may be added several other cases in which the anatomical picture of combined system disease was not present alone but together with more or less well-marked transverse changes in the dorsal cord, so that, especially after some time, it is difficult to determine how much in these cases is primary degeneration and how much is secondary.

The clearest case is that of Nonne. Eight years after syphilitic infection the typical picture of syphilitic spinal paralysis began slowly to develop. Death occurred after two years from pneumonia. Post mortem chronic myelitic degeneration from the eighth to the eleventh dorsal segment was found, but in addition there was a combined system disease above and below, which was certainly not secondary.

Similar cases have been contributed by von Strümpell,[21] 1880; Dreschfeld,[22] Williamson,[23] and lately another by Long and Wiki,[24] 1902, which, however, is open to dispute. It would take us too far afield to describe them more accurately and critically. I will only point out that a

[16] Westphal's Archiv für Psychiatrie, &c., Band xv., 1881.
[17] Münchener Abhandlung, Band I., No. 26, 1896.
[18] Westphal's Archiv für Psychiatrie, &c., Band xxix., 1897, Observation I.
[19] Syphilitic Disease of the Spinal Cord, 1899, p. 86.
[20] The author proves in detail, and with ability, that here it is *not* a question of *secondary degeneration* but doubtless of *primary combined system disease*. I do not, therefore, understand how he can finally express the idea that this combined sclerosis started from a meningo-myelitis.
[21] Archiv für Psychiatrie, Band x., 1827.
[22] Brain, January, 1888.
[23] Loc. cit., 1899
[24] Nouvelle Iconographie de la Salpêtrière.

multiple (combined) system degeneration in the lateral and posterior tracts is common to all, the secondary or primary nature of which, however, is difficult to determine or define, because there is in addition in the dorsal cord a patchy, more or less incomplete transverse lesion (in Williamson's case a gummatous infiltration in one lateral tract). But I must say that I am strongly of opinion that the main factor is the combined system disease, by the side of which the transverse lesion appears as etiologically a quite permissible complication. This point can, of course, be cleared up only by further investigation.

Neither will I insist upon mentioning here two further cases of typical lateral sclerosis which were referred by the authors to syphilis; they are the above-mentioned cases of spastic spinal paralysis described by Minkowski and Friedmann. They should be regarded as pure disease of the pyramidal tracts and as incomplete combined system disease respectively, but I do not know whether they can be traced to syphilis with sufficient certainty. This, of course, applies also to most of the cases above enumerated, for a certain connexion with syphilis is difficult to demonstrate; but that syphilis has gone before, that perhaps it can still be traced in some parts of the body, that no other responsible cause is present, and the frequent clinical occurrence of this combination—these points speak in its favour. There are as yet no extensive statistics as in the case of tabes, and the so-called specific changes (gummatous infiltrations, tumours, inflammations, diseases of vessels, meningitis, &c.) are not infrequently absent post mortem, so that for the present it can only be said that the syphilitic origin of the disease is highly probable. Beyond this we cannot at present go.

The fairly numerous cases of other kinds which conform to our two groups of anatomical conditions without any definite border-line intervening—cases in which one finds a more diffuse myelitic change, genuine transverse lesions, softenings, and more marked alterations in the vessels, and which are finally often complicated by more extensive gummatous meningitous (meningo-myelitis syphilitica)—these cases certainly run their course with quite different clinical symptoms, but leave, in some cases, as a final result, the picture of syphilitic spinal paralysis, but without being identical with the same. They require to be separated from syphilitic spinal paralysis (according to their mode of origin, course, and certain types of the clinical symptom picture), and I hope that this will become easier in time, as more attention is paid to it and points in the diagnosis are more carefully looked for and found. But, as far as I can see, one may already say that the great majority of cases show a definite anatomical condition—though not quite of the kind that I had anticipated—underlying the clinical symptom group which I have described, in its pure uncomplicated form—namely, the picture of a combined system disease of the lateral and posterior tracts, present either quite alone or accompanied by a somewhat diffuse, patchy transverse lesion in the dorsal spine. It is almost self-evident that in the case of syphilis this anatomical picture should not always be quite pure and that there should be transition stages to other spinal diseases of syphilitic origin.

I will not discuss to-day the pathology of the several symptoms, but I hope that you will allow me to say that the symptoms of spastic spinal paralysis doubtless result from disease of the lateral tracts, and that the accompanying disturbances of the bladder functions and of sensation may be referred to degeneration of the posterior tracts (perhaps also of the grey posterior columns); this might also explain the fact that in some cases there are indications of ataxia and that often the muscular rigidity appears so strikingly small in comparison.

The diagnosis of these forms of disease is not very difficult in most cases and may be confidently made when the typical clinical picture has developed slowly and gradually or also perhaps rather more acutely (after the occurrence of injuries, traumata, excesses, over-exertion, &c.), and when syphilis can be proved in the previous history. I have often been able to make a diagnosis when a history of syphilis was at first missing and to ascertain afterwards the existence of this disease—e.g., in the case of female patients by examining the husband. It is distinguished from simple spastic spinal paralysis by the presence of disturbances of sensation and bladder function; from transverse myelitis by the absence of marked paralytic phenomena with decubitus, cystitis; and from meningo-myelitis by the absence of meningitic and root symptoms with their variable intensity and complicating paraplegia. Actual syphilitic myelitis, spinal gummata (which not uncommonly present themselves in the case of Brown-Séquard's paralysis), softenings and hæmorrhages caused by syphilitic disease of vessels—these generally present clinical pictures of a different kind, even though they may be difficult to recognise individually. Other spinal affections, like multiple sclerosis, syringomyelia, amyotrophic lateral sclerosis, anterior chronic poliomyelitis, &c., will hardly ever cause any difficulty in the diagnosis. As regards the prognosis I will only briefly say that it is not altogether unsatisfactory, as, even though recovery only very rarely occurs and can be expected only in the earliest stages, a standstill and improvement, the power of gaining a livelihood, and considerable duration of life may be expected. Many cases, however, succumb to exacerbation of the disease—paraplegia, marasmus, decubitus, &c.

I can be brief also as regards treatment. Energetic and repeated specific treatment with mercury and potassium iodide (or iodipin) is essential. The *traitement mixte* must often be continued for years. In addition the usual treatment of spastic spinal paralysis—i.e., of chronic grey degeneration of the spinal cord in general—must be practised. I only mention the results of hydropathy, electricity, massage, and gymnastics, of baths rich in CO_2, of arsenic and silver nitrate, and emphasise that in the treatment of the sequelæ of the disease, especially the spastic paralysis of the legs and the obstinate disorders of the bladder I have found the use of strychnine (repeated subcutaneous injections of from 0·002 to 0·01 of a gr.) to be of great benefit.

Gentlemen, in speaking of syphilitic spinal paralysis, I have dealt with a subject in the pathology of the spinal cord which is as important as it is difficult and complex. The effect of this deadly and insidious disease upon the spinal cord is extremely manifold, many-sided, changeful, and erratic. But till recently one recognised as certainly the result of syphilis only specific inflammatory changes, gummatous products and infiltrations in the spinal cord and meninges, and the specific changes in the blood-vessels. It is true, one always found besides these apparently simple inflammations, fibrous transformations, cicatricial changes in the connective tissue parts, and simple degenerative atrophy, grey degeneration and sclerosis in the nerve elements. But their derivation from syphilis was in many cases doubted by their observers. But by degrees we are learning to recognise that tabes, at any rate, with its typical grey degeneration of the posterior tracts, is dependent upon syphilis and is of syphilitic origin, and the knowledge is gaining ground that those apparently non-specific alterations in structure are often due to syphilis and that other primary degenerations also, systemic or non-systemic, are of the same origin.

A short time ago, in a paper which I read before the Neurological Congress in Baden-Baden, I sought to prove that those simple atrophic degeneration processes which have not at all the appearance of being specific may be referred to syphilis with as much right as the so-called gummatous specific changes are. There is now a widespread belief that they are probably caused in somewhat different ways from gummata, apparently by the action of specific poisons, syphilo-toxins, or the like. In this way the circle of syphilitic affections of the spinal cord is gradually expanding, and I think that I have shown you to-day that certain simple and combined system diseases also, particularly of the lateral tracts, can be caused by syphilis just as well as those of the posterior tracts (tabes). It will be the aim of our investigations for the next few years to settle the matter more definitely, to define more exactly the several forms of disease, and to make more accurate diagnosis possible; further, to inquire especially why it is that syphilis attacks at one time only the posterior tracts, at another only the lateral, and at yet another several tracts and fibre-systems at once; why it affects sometimes merely the vessels, the interstitial substance, and the meninges, and at other times only the nerve tissues; and why in some cases it produces its changes soon after infection, and in others not till years or decades later. All these points are still wrapt in obscurity and the manifold predisposing causes and influences which are doubtless at work are only known to us in very slight degree.

It would be very tempting to elaborate these near-lying thoughts still further, but I fear, gentlemen, that I have already trespassed too much upon your time and patience. I must be content with having, as I hope, pointed out to-day a few positive facts from the pathology of the spinal cord, as well as the manifold gaps in our knowledge of this

special subject. It is always advantageous to science when such gaps are exposed and when new problems are pointed out and new questions are raised, for they encourage the investigator to renewed effort.

An Introductory Address

ON

THE REORGANISED UNIVERSITY OF LONDON.

Delivered at St. Mary's Hospital Medical School at the Opening of the Winter Session on Oct. 3rd, 1902,

BY SIR A. W. RÜCKER, D.Sc., F.R.S.,
PRINCIPAL OF THE UNIVERSITY OF LONDON.

GENTLEMEN,—I believe that the introductory address at a great London hospital is generally given by one of the leaders of the medical profession, by someone whose name is known to you as having done all, and perhaps more, than all you can ever hope to achieve, to imitate whom is your highest ambition, and to listen to whom, as he warns you of dangers which he himself has surmounted and directs you to aims and objects which he himself has attained, is in itself an education. One who has fought with disease and grappled with pain and has passed through the ordeal without losing tenderness for the sufferer or sympathy with the bereaved gives you from the fulness of his heart watchwords which you will find of inestimable service when you yourselves, alone and unaided, face for others the issues of life and death. Such a one I am not, and I come among you to-day fully conscious that I cannot speak to you with the authority of a man who has trodden the path in life which you have selected for yourselves. I must therefore begin by disclaiming all responsibility for my presence here and must leave you either to applaud or to condemn the authorities of your school for having broken through an old tradition and asked a layman to address you. But if the close tie of a common profession does not bind us together, I may at least hope that it is a good omen for closer relations between your profession and the University of London that I should be here to-day as principal of the University. For a well-lived life is a continual process of adjustment between the more urgent claims and duties which family and professional ties force upon us and those not less important, if less imperious, calls which we cannot neglect without prejudice to our relations to the wider commonwealths of learning, of the State, and of mankind.

Medicine is one of the oldest and the noblest of the arts, but it is also a science and is closely related to other sciences. Dr. Gilbert, who was both Queen Elizabeth's physician and the father of the science of magnetism, was only a type of many who before and after him have ranked not only as great medical men but among the leaders of scientific thought. Nowadays, whether he will or no, the competent medical man is forced, as a very condition of his competence, to face problems which touch not only on physics and chemistry but on those profounder questions which deal with the relations of mind and matter and with the nature of knowledge itself. As one who has been a student of science I am here to-day to remind you that your profession is but a province in a larger confederation—the commonwealth of learning. Further, the increase in the number of our race, the huge aggregations into which men are now gathered, have made it necessary to insist by rules and regulations—obedience to which is enforced on all—on common methods of procedure, common precautions against disease, common safeguards for the public good, in many matters on which the individual was once left to act for himself. On the dangers which may attend this process this is not the time to dwell; it is probably in part inevitable, and whether inevitable or not it is in progress, so that many of you will in one capacity or another find yourselves the guardians of the health and safety not only of individuals but of communities. As a layman I may perhaps with better grace remind you that the medical profession, not only through the General Medical Council, not only through its colleges, but through offices held by hundreds of its individual members, is now in official and organic relationship to the commonwealth of the State. But this connexion is again merged in a wider relationship to mankind at large. All the world knows that the medical man works, not only for the individual, not only for his country, but for all the world. No patents protect his discoveries for his private gain. No self-respecting foe aims a blow at him, for on the battlefield he tends friend and foe alike. Work done or a discovery made in a London hospital may, ere the year be out, be alleviating pain and restoring health in all the continents of the world. You, then, less perhaps than any other body of men, are unlikely to forget your ties to the commonwealths of learning, of the State, and of mankind, and you will bear with me if for a few moments I attempt to remind you of the new relations in which you stand to the first of these.

It had long been one of the anomalies in which we Britons seem sometimes to take a perverted pride, that the capital of the greatest empire in the world had in it no university having special and local relations to itself. It is true that there was a University of London. It is true that its offices were in Burlington Gardens, but it was in no sense the special property of Londoners. Its examinations were open to them, but they were open to all the world beside. The necessary funds were obtained, not from the resources of London, but from the Imperial exchequer. And the limits of its work were as restricted as its relations to the whole empire were wide. It did not teach, and outside the walls of the Brown Institution, it did not investigate. And yet do not misunderstand me. I am not here to criticise the University of London in what I may call its larval form. I was for too many years a member of the Senate to make it either possible or respectable for me to do that even if I were inclined to the task. Hidden beneath the bands and swaddling clothes which checked its development and confined its energies were enshrined as vivifying formative principles the intentions of its founders, if I may call by that name those to whose efforts its foundation was chiefly due. These men "had in view three principal objects: to place a university education within the reach of residents in London; to make such education accessible to those who were not members of the Church of England; to establish extended and systematic courses of education for the legal and medical professions and for civil engineers." I will not undertake the ungrateful task of telling the oft-told tale of how their intentions were in part and for a time frustrated. The founders of the University suffered the fate of men in advance of their age. The active opposition of the older corporations, the religious differences which three-quarters of a century ago were the bane of university, as they still are of primary, education checked the movement. The struggle resulted in a compromise. The duties of teaching and examining were severed. University and King's Colleges and the great medical schools undertook the one and the University of London the other.

In spite of this unnatural severance the University did good work. Its degrees took high rank. It took the lead in recognising that women had a right to share in university distinctions. It was the first university in England to establish a faculty of science. In days when pride in our Imperial inheritance was counted a sin against knowledge and reason, and when men's hearts failed them through the very fear of being great, the University of London, founded as it was by Radicals, maintained a connexion, not very strong, not very successful, but still a living connexion with the fringes of the empire. But all through these years the University felt a restlessness like that of one whose life falls short of his own ideals. It had examined its thousands, but whom had it taught? It had been the first to confer degrees upon women, but who recognised Bedford and Holloway Colleges as having relations to the University of London similar to those which Newnham, Girton, and Somerville had to Oxford or Cambridge? It gave degrees to all irrespective of their creed, but more than 60 years after its foundation the University itself had not established a single "systematic course of education for legal and medical professions" or "for civil engineers." Whatever it had done—and it had done much—it had not carried out the programme of its founders.

Turning from the work of the University itself to the progress of the higher education in London it is true that great advances had been made. University and King's

Colleges had grown and prospered. The Royal College of Science had made the experiment of supplying the highest scientific education without taking any official cognisance of the progress which its students had made in other subjects. The magnificent liberality of the City companies had done something to meet the modern demand for advanced training in technology. The medical schools, as you know better than I do, had developed in every direction. The county council and some of the City companies had founded a large number of polytechnics in which excellent courses were open to day and evening students. How, then, it may be asked, had the failure of the University to do all that had been hoped injured the cause of education? The work of teaching had been done, though not by the University itself. What did it matter, except from the point of view of the framer of paper constitutions, whom the work was done by as long as it was done? The answers to these questions are manifold, but they can be summarised in a few sentences. The educational equipment of London was great but was nevertheless wholly inadequate. It suffered from all the disadvantages which impede isolated and independent efforts, framed on no common principle, and but vaguely directed to a common end. It failed to attract the public attention and the public respect it deserved because it was presented to the public view in fragments. There was no one whose business it was to take or to show to the world a general bird's-eye view of the whole. Unnatural barriers were interposed between different kinds of work, as between teaching and examining, between the teachers of different subjects, and between those teaching the same subject in independent institutions. The difference between university education as it was and as it might be in London was the difference between the British navy (if such it can be called) when the Cinque Ports furnished such squadrons as they could provide to meet an emergency and the British navy as it is, or perhaps I should say as it aims at being, when each ship is assigned a position as a component of an organically perfect fleet, and each fleet is itself a portion of a carefully devised and fully elaborated scheme of national defence. It is hardly necessary to produce evidence for the truth of these statements.

The educational equipment of London was inadequate, for it was and is in many respects inferior to what is provided, not only in Germany and America, but in our own provinces. There is not a single laboratory in the metropolis devoted to pure chemistry and physics which will compare in magnitude or in the perfection of its details with some of those which exist elsewhere. The new laboratories of the Royal College of Science will not be completed for two years or more, but they are built on a scale to which London has hitherto been unaccustomed. It is also impossible to assert that the excellent technical laboratories of the City and Guilds Institute are of the same order of magnitude as the Technische Hochschule at Charlottenburg. Next I have said that higher education in London suffered from all the disadvantages which impede isolated and independent efforts, framed on no common principle, and but vaguely directed to a common end. The University examinations were constructed to suit all comers—both the Senior Wrangler who desired to add to his laurels or his banker's balance and the student who added laborious nights of study to days devoted to the stern necessity of bread-winning. They gave the colleges no opportunity of developing schools of thought or study, marked with the impress of the genius of some remarkable man or group of men. A Huxley might devise, as he did devise, for the Royal College of Science a special arrangement of the subjects taught in an order and on a method different from that which obtains elsewhere; but the university system possessed no flexibility which enabled it to recognise or to encourage the new departure. The multiplication of examinations, which is one of the banes of English education, flourished in London. Practically, no use was made of the University matriculation as a test of fitness to enter a college. Class examinations, scholarship examinations, and associateship examinations were all held independently by the colleges, and it is not too much to say that scores of examination papers were set where a few would have sufficed. Further, the University did not make any arrangements to attract graduates from other universities to complete their education amid the resources of London. Be he never so distinguished, no one could take one of the higher London degrees unless he began by sitting humbly among schoolboys to be tested as a matriculant in his knowledge of easy Latin sentences and quadratic equations. All the other examinations had to be taken at the prescribed intervals, with the natural result that by such persons they were not taken at all, and that a distinguished London teacher might, if he could, attract scholars from abroad to his laboratory, but if so they came and went unrecognised by the University. The teachers themselves, especially if teachers of different subjects and in different classes of institutions, were not united into a band of fellow-workers by the University. Teachers of the same subject might, and did, meet at the learned societies with which they were connected, but they met as investigators, not as teachers, and too often learned to regard each other as rivals rather than as bound to coöperate for the general good. No wonder, then, that university teaching in London was often disregarded by Londoners. A population so numerous as that of the metropolis can only be made actively aware of the existence of an institution if that institution is on the largest scale, if it touches many classes, interests many minds, and appeals to many tastes. This the University of London did, but it appealed by one method only, that of the examiner, and the method was too restricted to make it a vital factor in London life.

Let me once more repeat that in thus pointing out the unsatisfactory features of the old system I am neither depreciating the good work which the University of London did nor blaming those who controlled it, of whom I myself was one. The powers which the originators of the University desired were not granted to them. Most of the difficulties to which I have referred were due to this restriction. The members of the late senate were fully conscious of the defects of the institution they controlled and were active in bringing about the happier state of things which now obtains.

For now, instead of being isolated, all classes of London teachers who take part in university work are brought together in faculties and boards of studies to consider questions of common interest to them all. Their recommendations are considered by their own chosen representatives forming an academic council, all of whom are also members of the supreme governing body, the senate. The first steps have been taken to unite college and university examinations. On the one hand, graduates of other universities are allowed to take the London doctorate if they study for two years in London, though for obvious reasons this privilege is not extended to medicine and surgery. On the other hand, special arrangements are made to meet the wants of those whose days are spent at business or in the workshop. The University can form ties of very various kinds with different institutions. It can found and govern them directly if it so pleases and if funds permit. Subject to the necessary legal formalities it can take over the entire control of existing institutions which desire what has been called absorption, or it can recognise and work with institutions such as your own, which are self-governing and financially independent; or, finally, its relations with a particular teaching body may be limited to the recognition of two or three of the teachers. These examples may suffice to prove that a very rigid system, suitable for dealing with persons as to whose educational antecedents no questions were asked, has been replaced, as far as London is concerned, by a system of great flexibility, which embraces in its scope all those concerned or interested in the higher education of London and which, I venture to think, has already begun to develop a feeling of corporate union between the teachers and the students of different colleges and schools.

But instead of dealing with generalities let me take the case of your own faculty and tell you what has been, and what may be, done. In the first place a new matriculation examination has been devised, which has just been held for the first time and will entirely replace the old form of examination after June next. It differs from the old examination chiefly in the fact that the number of subjects required has been reduced from six to five and that greater liberty of choice is allowed to the candidate and therefore to the teacher. The educationalist nowadays has to steer his way between two policies which are to a certain extent opposed. One of these demands curricula and systems of examination which shall ensure that the student has a minimum of knowledge on all subjects which may be fairly represented as essential to a good education. The other contends that great latitude

should be left to the schoolmaster in dealing with individual minds; that he shall not be compelled by some external authority to attempt to mould all boys of ordinary abilities to the same pattern; and, further, that there are so many subjects of which it is desirable that an educated man should know something that if the student is to be examined in all these the yoke laid upon him is heavier than it is good for him to bear. The new matriculation is deliberately framed so as to leave the master a wide latitude of choice. It must not be taken as indicating that in the opinion of the University a school curriculum should embrace five subjects only or that any of the permitted combinations of five subjects are in ordinary cases equally suitable. For myself I think that a boy looking forward to a scientific career will be wise not to neglect Latin. I think it desirable that all boys should be taught science, but I very much doubt if the kind of science which is the best counterpoise to a too exclusively literary education is that in which proficiency can best be tested by examination. For the moment, however, I am not concerned with the controversies which rage round this question. I only wish to point out that the new examination makes it possible for London medical students to enter upon the university course whatever their previous educational history may have been. A boy brought up by teachers who ignored science will not be made to suffer for their sins provided only he has been reasonably well educated in languages. A student whose education has been chiefly on modern lines will not be rejected by the University provided that in addition to an adequate acquaintance with science and mathematics he knows something of his own and at least one other language.

No doubt this system, like every other, may be criticised. Thus it may be urged that by means of the matriculation examination pressure ought to be brought to bear upon all schools to teach, say, both Latin and science. The answer to this criticism is not difficult. The examination of the few students whom a head-master may select to send in for the matriculation examination is a very imperfect test of the efficiency in the teaching of the school. That can be better applied by an examination of the school as a whole. Such examinations have for many years been conducted by the universities. The University of London has established a separate department which will deal with this question and I venture to think that any influence which the universities may legitimately exercise on the curricula of schools will be more usefully applied directly by examination and inspection than indirectly by compelling matriculants to submit themselves for examination in everything that they may reasonably be expected to know. Those masters who prefer a public test to that of a special school examination can still send in their students for the matriculation; and a further change which has been introduced may perhaps make this test more satisfactory than heretofore. Up to the present the same examiners have conducted all the examinations in the same subject from the matriculation to the doctorate. It does not follow that the expert who can best gauge the value of a thesis worthy of a place in the Transactions of the Royal Society is also the best qualified to test the attainments of matriculants. In future, therefore, special examiners will be appointed for the matriculation, and there are every hope and desire that masters of schools will themselves share in work for which they are specially qualified. Already the University has been fortunate in securing the services of several distinguished teachers at the public schools to act as examiners in the matriculation, and the local interests of the reorganised University are emphasised by the fact that among them is the headmaster of Westminster.

Finally, the matriculation examination is no longer to be used as a means for distributing honours and awarding scholarships, though, as in the past, candidates will be placed in two divisions. It is, however, the earnest desire of the University authorities to reduce the number of examinations as far as possible and they have resolved upon the establishment of one general scholarship examination with the requisite number of options and variants in which the University will examine not only for its own scholarships but for those of any school of the University or of any suitable body of trustees which may be desirous of using the University examination for that purpose. It has been found to be possible to hold common examinations for the scholarships of several colleges at the older universities; it ought not to be impossible in London and I do not see why the scheme should not be carried further and why the results of the ordinary matriculation examination should not be communicated to college authorities even in the case of students who do not pass, if that course will help to make that examination serve as a substitute for college entrance examinations, or why honours in the matriculation should not be replaced by an honours' list published in connexion with the scholarships. All I can say is that in these and all other respects there is the most earnest desire on the part of the University to coöperate with the schools in devising a system which shall be free from red tape and which shall make a few examinations serve as many purposes as possible.

The new matriculation examination is not intended to be easier than the old form: it is intended to be more elastic, to do something to free English education from mere dependence on examinations, and in particular to make the relations between the universities and the schools less rigid, to leave more to the teacher and less to the examiner. Of course, this effort to make the examination system more flexible and to direct the teaching of science into forms in which individualism is encouraged is objected to by those who believe that science teaching must fall into the background if it is deprived of the support of the rule that no one shall be allowed to enter the University of London unless he can pass an examination in science.

The objection, in so far as it has any weight, is based on a misconception of the policy of the University. In the more advanced examinations of internal students—that is, of men studying in or near London under conditions approved by the University—it is possible to mitigate the evils of the examination system. It is possible to supplement the evidence obtained in the examination itself by an inspection of the work done during the course of study. It is possible to carry out practical examinations in the laboratories in which the students have worked. But the matriculation examination is from its very nature an examination of all and sundry, of half a dozen students from this school and a dozen from that, of students over whose past career the University may have had no control, who have been taught by teachers of whom the University may have no knowledge. In so far as that control and that knowledge may be obtained it can best be exercised by dealing with the individual school, by supplementing examination by such inspection as may make that examination a real test of the student and a real test of the school. Every effort will be made to coöperate with the school authorities to free them from the necessity of moulding their teaching to suit one rigid system of examination. If they believe that the best scientific education for many boys of school age is not so much an acquaintance with the theories of physics and chemistry as the education of the hand in the workshop and the cultivation of the power of observation by the study of natural history in the field they will be free to follow the course thus marked out by their own experience, to lay the results before the University inspectors, and to get full credit for the work they have done. There can be little doubt that when the system is fully developed one vast examination will be replaced or supplemented by a harmonious coöperation between the University and the schools, a system more flexible and therefore more efficient than any examination test can be. Such a system will not be established in a day, and while it is growing the University has determined that no rigid rules of its own shall check the development of scientific teaching on the most modern lines; and while I as an individual—and, if I may venture to speak for them, the senate as a whole—urge with all the force of a strong conviction the policy of teaching all boys and girls some science, of doing all that can be done to detect boys and girls of scientific ability and to make the most of powers which will be invaluable to the nation, yet it may be, and I for one think that it is, more important to strike a blow at the common error of trying to get the right thing done in the wrong way, to influence the schools by examinations for which at the best only a few of their students enter.

Turning next to the career of the medical student who has matriculated, the question arises whether it is not desirable that his preliminary and intermediate medical studies should be carried on in an institution specially devoted to these subjects and not in connexion with a particular medical school. On this point I should not presume to lay down any general rule. In such matters it is the business of the University not to act on any *a priori* hypothesis, but to find out what those most competent to judge believe to be desirable and then, if possible,

to assist in carrying out their wishes. I can therefore only say that there is no reason why, even if some medical schools prefer to teach physics and chemistry in their own laboratories, others should not combine to teach them in common; and, further, that as the efficiency of medical training is a matter of the highest public importance public support would be more readily given to improve that part of the curriculum which is not necessarily associated with a hospital, if the teaching were concentrated in a few central institutes under the direct control of the University. This is, however, a matter for the profession to decide; and as it is an open secret that it is receiving the most careful consideration I will not dwell upon it further. But whether the teaching of the early medical subjects is or is not further organised in some such way as I have indicated there can be no doubt that the unique resources of London should be made more available than they have hitherto been for the advantage of medical students who wish to carry as far as possible the study of those sciences which are more directly connected with their profession. An excellent beginning has been made in the case of physiology. Connected with the medical schools there are a number of first-rate physiologists, each one of whom is pursuing some special study, each of whom is specially fitted to guide his students along a particular line of research. These men have banded themselves together and have offered to give, and for a time to give gratuitously, courses of lectures open to all comers approved by the authorities, but intended specially for the students in London medical schools, with the further inducement that the subjects of the lectures will be included by the Board of Studies in the curricula for the examinations. The very fact of the existence of a teaching university has thus made possible a combination of forces which would not otherwise have been united, and the incident is both of happy omen for the future of the higher education in London and is evidence of the earnest and practical spirit in which the teachers are regarding their work. It is needless to add that one of the most active of this band of physiologists is Dr. A. D. Waller of St. Mary's Medical School. But this is not all. Men, be they never so willing, are not enough unless means are provided for carrying on their work. The space in the University buildings is barely sufficient for the necessary offices and examination laboratories, but a suite of rooms has been surrendered for a time for the physiological department. The fittings and instruments, and, indeed, all the expenses, are most generously provided by Mr. Walter Palmer, M.P., who has thus made it possible to carry out for two years the experiment as to whether the combined lectures will attract students. Two preliminary courses have been in all respects successful and in a few weeks the laboratory will be formally opened by the Chancellor of the University, Lord Rosebery.

I cannot but hope that the development of the organisation of the teaching of the sciences connected with medicine will follow the lines thus indicated, that teaching will be combined with research, that those teachers who are themselves advancing their subjects will be able to lay the results of their investigations before all London students, and not only so but that the new arrangements as to the doctorate may lead many graduates of foreign and colonial universities to come to London to study in research laboratories of which the physiological department of the University is the earliest type. In this connexion we must avoid two mistakes. On the one hand, the opinion of the expert in the subjects generally classed as preliminary medical studies must not be allowed to over-ride that of the leaders of the profession. The physician and surgeon know best how far the study of ancillary subjects may be pushed with benefit to students whose lives will chiefly be occupied with the direct practical application of their profession. But, on the other hand, the students as long as they are studying with these subjects must be brought into contact with men who are themselves advancing knowledge. The scientific spirit is best appreciated by those who have seen masters of scientific method at work. The whole tone of a laboratory is different if the students feel that they are in the full stream of the advance of thought; if they know that they will in after-life be proud to have been under the influence of their teachers as of men who have left their mark on the pages of the history of science. The average medical student ought not to be deprived of this advantage in the first stages of his career, but he can only obtain it if his studies are carried on under conditions which will tempt teachers of eminence to superintend his work. For this reason, if for no other, I hope that if a policy of concentration of teaching is adopted the research laboratories will be associated with those in which the more elementary sections of the subjects are pursued. It is the only way to make the pass teaching really efficient, while the fact that a large number of students pass under the eye of a master of his subject will make it easier for him to discover those who possess the special ability required to pursue that subject further than it is necessary or desirable that the mass of students should do.

I venture to suggest that it will be a happy coincidence if this year, which has been made remarkable by the fact that His Majesty has placed himself at the head of a great movement for relieving London hospitals from the financial embarrassments which have checked or injured them, should also be remembered as that in which an advance was made in the provision of teaching for medical students, in which the great forces available for medical education in London drew closer together, in which private benefactions were given on a large scale not only to soothe suffering directly in the hospitals, but indirectly in the medical schools, by increasing the knowledge and training the abilities of those on whose knowledge and abilities the efficiency of the hospitals will in the next generation depend.

In conclusion, let me add a remark. I have tried to show you some of the ways in which the University of London may become a living factor in the education of London, and I wish to guard myself against the criticism that I have not covered the whole ground. To do that would require many hours instead of the few minutes during which I have trespassed on your patience. Further, I wish again to insist on the fact that the new schemes we are planning, the new efforts which have been, or are about to be, made, will not lead the University to abandon the work it has done in the past. For some time to come there will be many students who are anxious and willing to study but whom circumstances exclude from the range of the influences I have been discussing. For these in the future, as in the past, the University will do its best. It will still have examinations open to all the world. It will not turn away those who are fighting against educational and financial difficulties. It will not, when aiming at securing more flexibility for its methods and a more elastic franchise for its undergraduates, introduce a new rigidity into its examinations or disenfranchise those who have for so long looked to it as the only means of obtaining the recognition of intellectual attainments which they had acquired under circumstances which made those attainments doubly valuable. The reorganised University will not destroy the work of its predecessor. I venture to hope that it will fulfil the intention of its founders in a wider and more complete system than the prejudices of the past would tolerate.

The Huxley Lecture

ON

RECENT STUDIES OF IMMUNITY WITH SPECIAL REFERENCE TO THEIR BEARING ON PATHOLOGY.[1]

Delivered at the Opening of the Winter Session of Charing Cross Hospital Medical School on Oct. 1st, 1902,

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GENTLEMEN,—You will readily believe that with my deep appreciation of the high honour conferred by the invitation to deliver the fourth Huxley Lecture there was joined a sense of great embarrassment in being called upon to follow in this office three such leaders of world-wide fame as Sir Michael Foster, Professor Virchow, and Lord Lister. But the letter of the committee of the Charing Cross Hospital Medical School stated that the choice of a successor

[1] Parts of this lecture are here published only in abstract.

to these great names was a "tribute of our admiration for the great army of scientific workers on the other side of the Atlantic." While I cannot assume to occupy any other place in this army than that of a soldier in the ranks I felt that if my acceptance of this invitation could be regarded as in any sense an expression of appreciation by American workers in science of the commendation and goodwill of their British colleagues, of our large indebtedness to them, of our sense of the common interests, the comradeship and the kinship of the English-speaking peoples on both sides of the ocean, I should not decline, even if summoned to occupy a position of danger. There was another consideration which I may be permitted here to mention. Through Huxley there is, if not a bond, at least a link between the Charing Cross Hospital Medical School and the Johns Hopkins University. This lectureship was founded to commemorate the fact that Huxley received his entire medical education at the Charing Cross Hospital Medical School. While throughout America the name of Huxley is held in high honour as that of a great discoverer and interpreter in science, and while the influence which he has exerted upon popular as well as scientific opinion through those messages peculiarly fitted to the needs of English thought is not less there than among his own countrymen, we at the Johns Hopkins University have special reasons to acknowledge our gratitude to him. He crossed the ocean to deliver the principal address at the opening of this University in 1876 and he then gave utterance to ideas concerning university, and especially medical, education which were at the time and have remained an inspiration and a guide to us. Then, too, the Johns Hopkins University owes to Huxley and to Michael Foster the accession to its faculty of my lamented colleague, Newell Martin, who by the introduction and development of the biological methods and conceptions of his teachers gave such new directions and so great an impulse to biological study in America that his own work and that of his pupils started for us a new era in this department.

The first Huxley lecturer has made it unnecessary for his successors to dwell upon Huxley's studentship at the Charing Cross Hospital, upon the important influence which this had upon his career, or upon his great services to medical science, although his chief title to fame lies outside of the domain of medicine. I should like, however, to mention a passage, although it must be familiar to you, from Mr. Leonard Huxley's charming "Life and Letters" of his father, showing that it was at Charing Cross Hospital where Huxley first felt the influence of daily intercourse with a really able teacher—namely, Mr. Wharton Jones, the lecturer on physiology at the School of Medicine there. Wharton Jones, who will doubtless be longest remembered as the discoverer of the amœboid movements of the white blood corpuscles, was an experimental physiologist and pathologist of much originality, and it seems to me that there has not been, even in his own country, so full a recognition of his work as its importance merits.

Before passing to the special theme of this lecture it is fitting that I should pause, if only for a moment, to call to mind with affection and reverence that recently departed great man who honoured and delighted you four years ago and who has conferred such high distinction upon the office of Huxley lecturer. When one considers the full import of the discovery and establishment by Virchow of the principles of cellular pathology, principles that form the secure foundation upon which nearly two generations have built and future generations will continue to build the edifice of scientific medicine, I do not know what greater name there is in the whole history of medicine than that of Rudolf Virchow. We mourn the loss of a hero of medicine and of science, a benefactor of his race, and we rejoice in the rich fruitage of a long and well-spent life.

The first place in experimental medicine to-day is occupied by the problems of immunity and, in accordance with the trust of the Huxley Lectureship, which provides that the lecture shall relate to "recent advances in science and their bearing upon medicine and surgery," I have chosen for my theme "Recent Studies of Immunity with Special Reference to their Bearing on Pathology." As it would be hopeless to attempt a complete review of this broad subject within the space of a single lecture I shall dwell more particularly upon certain of its aspects, not always of necessity the most important ones, which I conceive to be less familiar to most physicians, or which have engaged my attention, although much which I shall say is, of course, known to those who have followed the results of recent work in these new lines of investigation. Under "studies of immunity" I have included, as a matter of convenience, though not with strict accuracy, investigations which, although the direct outgrowth of those primarily directed toward a solution of the problems of immunity, have extended far beyond these bounds and have revealed specific properties of cells and fluids in health and disease of the broadest biological interest. In endeavouring to follow in its intimate workings the contest of the living body with its invaders the attention of investigators has naturally been drawn both to the action of the cells and to the properties of the fluids of the body in this struggle, to the latter sometimes without sufficient consideration of the dependence of the humours in their composition upon the cells. Each of these lines of study, whether followed separately or conjointly, has led to the discovery of important facts relating to the mechanism of immunity. We owe to Metchnikoff and his pupils the most important observations concerning the direct participation of leucocytes and other cells in the processes of infection and the production of immunity. Whatever attitude one may take towards Metchnikoff's well-known phagocytic theory of immunity, one must recognise the wealth of new facts which he has brought to light and must admire the skill and fertility of resource with which for two decades he has defended this theory against severe assaults, and he has done so, in my judgment, with a large measure of success. With wonderful ingenuity in his recent book on immunity he rescues the phagocytes and applies to a deeper insight into their activities results of his opponents' work

The other line of research, in some respects more important, was opened by Nuttall in 1888, working in Flügge's laboratory, by his systematic study of the anti-bacterial properties of the body fluids, particularly of the blood serum. It is true that there were previous indications of the power of fresh blood to kill bacteria; indeed, if one wishes to trace this matter historically to its roots he must go back to John Hunter who was quite familiar with the anti-putrefactive power of fresh blood and knew that putrefying fluid could be added in small quantity to fresh blood without setting up putrefaction. After Nuttall our knowledge of the bactericidal power of the blood serum was extended by Buchner and others, but the next advance of fundamental importance in this direction was Pfeiffer's discovery in 1894 of the quick extracellular disintegration and solution of cholera spirilla in the peritoneal cavity of immunised guinea-pigs or in that of normal guinea-pigs treated with immune serum and of the presence in the immune serum of a specific substance concerned in the bacteriolytic process, although by itself without bactericidal power. In the meantime Behring had made his great discovery of antitoxic immunity and of the protective and curative value of antitoxic serum, and Ehrlich had done much to elucidate the nature of this form of immunity. It soon became apparent, however, that immunity from the great majority of bacterial infections does not depend in the main upon the antitoxic principle. The attention of bacteriologists, therefore, was drawn more and more to the so-called "Pfeiffer phenomenon" which was found to be of great general significance, and starting from this and especially from the investigation of the analogous and much more readily studied solution of red corpuscles by foreign serum, there has followed in rapid succession up to the present time a series of new and most interesting discoveries and conceptions with which are connected many names, but most prominently those of Metchnikoff and Bordet, and of Ehrlich and Morgenroth.

Through these various studies of immunity we have become acquainted with an important physiological capacity of the healthy organism, the extent, and in most instances the existence, of which was unsuspected until quite recent years. This capacity is the power to produce substances specifically antagonistic to all sorts of foreign cells and cellular products and derivatives. The substances capable of inducing this immunising reaction appear to be mainly of an assimilable, albuminous nature, or at least intimately associated with such material, although it has been proved that certain non-albuminous derivatives of proteids have the same power.[2] The mode of antagonism of the specific bodies formed in response to the reception within the living organism

[2] Specific precipitins have been produced by injection of crystalline and other so-called pure proteids. Obermayer and Pick produced immune bodies by the use of non-albuminous products of tryptic digestion of certain albumins. Jacoby has shown that the specific body concerned in ricin immunisation is non-albuminous. Klein obtained entirely negative results with injections of starch, glycogen, glucose, gum arabic, and gelatin.

of substances capable of inducing the necessary reaction varies with the nature of these latter substances and consists in such diverse manifestations as neutralisation of poisons and of ferments, injury or destruction of cells, associated with characteristic morphological changes, cessation of motility of cells or their appendages, agglutination of cells, precipitation, and coagulation. In accordance with these different effects the corresponding antagonistic bodies, or anti-bodies as they are called, are classified as antitoxins, anti-enzymes, cytotoxins, agglutinins, precipitins, and coagulins, and even against these bodies, with the exception of the antitoxins, antagonists have in turn been produced. All of these bodies are in varying, but usually high, degree specific with reference both to the nature and to the source of the material upon which they exert their characteristic effects. The cytotoxins or cytolysins include not only the bacteriolysins and hæmolysins but also a great number of other cellular toxins present in the sera of animals which have received injections of cells from a different species. To every cellular group of an animal species there appears to correspond a specific cytotoxin. To designate these various cytotoxins such self-explanatory names as leukotoxin, spermotoxin, nephrotoxin, neurotoxin, thyreotoxin, and syncytiotoxin are used. Their specificity extends not only to the nature of the cells but also to the species of animal furnishing the cells used for their production.

One of the most important results of recent work is the separation of these specific anti-bodies into two groups, in one of which, represented by the antitoxins, the antagonists are single bodies; while in the other, represented by the cytolysins, the antagonistic effect requires the coöperation of two bodies. Of these two bodies the one which actually destroys the foreign cells or induces other specific effect is normally present in the cells or fluids of the organism, but it seems incapable of action without the intermediation of a body which is distinguished from it by greater resistance to heat and which is produced by the immunising reaction, although it may also be normally present in smaller amount.[3] The two elements composing a cytolysin exist quite independently of each other, so that one may be present without the other or be artificially removed without affecting the other. Of the multitude of names proposed for these cytolytic components those most commonly used for the body which is the specific product of immunisation, although it may also exist normally, are intermediary body, immune body, amboceptor, sensitiser, fixative, preparative, and desmon, and for the other body complement, alexin, and cytase. It is this latter body which contains the atomic group described as toxophoric or zymophoric.

Concerning the source, mode of action, and constitution of the specific antagonistic bodies we are very imperfectly informed. That they are of cellular origin seems certain, and Ehrlich on the basis of a series of experiments has advanced a hypothesis regarding them which, in my opinion better than any other hitherto suggested, accords with the known facts. Ehrlich has so recently and so fully in the Croonian Lecture presented before English readers his hypothesis of the side-chains or receptors and the basis for it that I need only recall to your minds his conception that the toxins, cells, and other substances which lead within the living body to the production of antitoxins, cytolysins, and other antagonists have this capacity only through the possession of specific affinities, called haptophore groups, for corresponding haptophore groups belonging to side-chains or receptors of certain cellular constituents of the body, and that in consequence of this appropriation of receptors others of like nature are reproduced in excess of the needs of the cell, and these being shed into the lymph and blood there constitute the antitoxins, intermediary bodies, agglutinins, and other specific antagonists. The antitoxic receptor has only a single combining affinity, which is for the toxin, whereas the cast-off receptors constituting the intermediary bodies of cytolysins have at least two affinities (hence called amboceptors by Ehrlich), one of a more highly specialised nature being for the invading bacteria or other foreign cells and the other for the complement.[4] The anti-body enters quantitatively into definite chemical union with its affinitive substance. The essence of Ehrlich's theory concerning antitoxin is thus tersely expressed by Behring: "The same substance which, when incorporated in the cells of the living body, is the prerequisite and condition for an intoxication becomes the means of cure when it exists in the circulating blood." So of the twofold bactericidal and cytolytic agents we may say that the living body possesses substances which may protect it by destruction of invaders or may injure it by destruction of its own cells according to the mates with which these substances are joined.

An inquiry which naturally arises in this connexion is, What is the physiological mechanism called into action in the processes resulting in the production of antitoxins, cytolysins, and similar bodies? We have no reason to suppose that the animal body is endowed with properties specially designed to meet pathological emergencies. Its sole weapons of defence, often lamentably imperfect for morbid states, are adapted primarily to physiological uses.[5] To the foregoing inquiry Ehrlich answers that the mechanism concerned is one physiologically employed for the assimilation by the cells of food. The receptors are in the cells, not for the purpose of linking poisons to the cells, but to seize certain food-stuffs, particularly the proteids, and the toxins and bacterial and other foreign cellular substances, if capable of inducing the immunising reaction, chance to have the requisite combining affinities for the food-receptors. It is interesting that Metchnikoff also, though from a different point of view, refers the mechanism of immunity to the physiological function of assimilation of food by the cells. Inasmuch as according to Ehrlich's hypothesis the specific antagonistic substances resulting from the injection of toxins and of foreign cells or derivatives of cells exist preformed in cells of the normal body, there would appear to be no reason why any one of them might not occasionally be present normally free in the blood or fluids. In fact, many of them, such as diphtheria and tetanus antitoxins, various anti-enzymes, bactericidal, hæmolytic, and other cellular toxins, agglutinins and a number of other bodies of this class as well as their anti-bodies, have been found repeatedly, though, of course, in the case of many inconstantly and with marked differences between individuals and species, in the blood of healthy human beings or animals when their presence could not reasonably be attributed to a specific immunisation. Of these normal anti-bodies the only one which is increased in amount by the process of immunisation is that specifically related to the material used to bring about the reaction. As already stated, it is the intermediary body,[6] not the complement, which is generated in immunisation against bacteria and other cells.

The foregoing statements, though of necessity condensed and incomplete, about the general characters of the specific anti-bodies will, I trust, help to a better understanding of what is to follow concerning the bearing of some of these discoveries on medical science and practice. I realise the difficulties which you must already have experienced, if unfamiliar with these new lines of research, in following a brief presentation of a subject in which not only are the facts so complex and the ideas so novel, but the terminology so strange and burdened with such a multitude of confusing synonyms. While deploring the multiplication of unnecessary new terms I should like to quote in this connexion a remark of Huxley.[7] "If we find that the ascertainment of the order of nature is facilitated by using

[3] Metchnikoff believes that the complement or cytase, which in his opinion exists under normal conditions solely within cells, not free in the plasma, acts in natural immunity without the cooperation of an intermediary body or fixative, the latter being concerned only in acquired or artificial immunity. The evidence seems, however, to favour the view that in this regard the conditions are similar in both forms of immunity, the main difference being the presence of a much larger amount of the specific immune body in the latter.

[4] According to Ehrlich's latest conception resulting from investigations to demonstrate the multiplicity of complements, an amboceptor has a single cytophilic affinity and a number of complementophilic affinities differing in their avidity for various complements. He regards the agglutinins, precipitins, and coagulins as unicleptors of more complex structure than the antitoxins, but Bail has recently brought evidence to show that agglutinins, like cytolysins, are composed of two elements. For the purposes of this lecture it is not deemed necessary to enter into these or many other details of this complicated subject. For comprehensive and admirable critical reviews of recent theories of immunity and Ehrlich's hypothesis of the receptors I would refer to Professor Ritchie's papers in the Journal of Hygiene, vol. ii., No. 2, and succeeding numbers and to Dr. Aschoff's paper in the Zeitschrift für allgemeine Physiologie, Band III., Heft 3.

[5] W. H. Welch: Adaptation in Pathological Processes. Transactions of the Congress of American Physicians and Surgeons, 1897, vol. iv.

[6] I use in this lecture the name "intermediary body" in preference to the more technical term "amboceptor," although Ehrlich applies the German equivalent—Zwischenkörper—only to normal as distinguished from immune amboceptors.

[7] On the Physical Basis of Life. Collected Essays, vol. i., p. 164, New York, 1893.

one terminology, or one set of symbols, rather than another it is our clear duty to use the former, and no harm can accrue so long as we bear in mind that we are dealing merely with terms and symbols." The most remarkable and characteristic attribute of these anti-bodies is the specificity of their relation to the substances which have led to their formation. Of some of them, such as diphtheria or tetanus antitoxin, this specificity is nearly absolute, of others, such as the precipitins, it is only relative.

The results already attained by the method of serum diagnosis,* using this expression in its widest sense, are not only of interest and importance to the biologist, physiologist, and chemist, but of great practical value to the bacteriologist and the physician. As this is not an aspect of my subject, broad and important as it is, upon the details of which I propose to dwell, it must suffice to present by way of illustration examples of the diagnostic application of different kinds of specific sera. The only means of detecting toxins of the class of diphtheria or tetanus toxin, snake venom, and certain vegetable poisons of the same category is their neutralisation by the corresponding anti-toxic sera. Occasion may arise where such detection is of practical and even medico-legal importance, as has been exemplified in India, where the criminal use of cobra venom is not unknown.

The application of serum diagnosis which is most familiar to physicians is the agglutinative test for typhoid fever. The principles of the agglutinative reaction were worked out in the laboratory of Professor Gruber in Vienna by himself and Durham, and were there first applied to the diagnosis of typhoid fever by Grünbaum who was anticipated in his publication by Widal who has made a thorough clinical study of the subject. The method is of great value not only in the diagnosis of disease but also in the identification of bacterial species and the recognition of relationships between species. Durham, to whom we owe important contributions to this subject, has given an ingenious hypothetical explanation of mutual agglutinative reactions, the main features of which are paralleled in Ehrlich and Morgenroth's doctrine, based upon experiments relating to the multiplicity of cell-receptors and of amboceptors concerned in hæmolysis.[9] We have found the agglutinative reaction an indispensable aid in the study of the series of cases of paratyphoid fever which have come under observation in Dr. Osler's wards at the Johns Hopkins Hospital and which otherwise it would have been scarcely possible to separate from typhoid fever.[10] The occurrence of para-typhoid fever as a distinct disease affords an explanation of a certain proportion of the failures of the serum from supposed typhoid fever patients to clump typhoid bacilli. Not less valuable is the serum test in the diagnosis of the bacillus dysenteriæ Shiga and of the diseases caused by it. This micro-organism has been shown by Flexner and his pupils, Vedder and Duval, to be the cause of acute dysenteries, and recently in Baltimore Duval and Bassett, working with the aid of the Rockefeller Institute for Medical Research at the Thomas Wilson Sanatorium for Children, have discovered that this same bacillus is in all probability the specific agent of infection in the summer diarrhœas of infants. Bacteriolytic sera have been used by Pfeiffer in the differentiation of cholera and allied spirilla, but few other bacteria present equally well the Pfeiffer reaction, which is not nearly so useful or handy a means of identification as the Gruber-Durham reaction.

Of other cytolytic sera the hæmolysins have been by far the most carefully studied. One of the most interesting results of this study has been the determination by precise quantitative methods of resemblances and of differences between red blood corpuscles which in no other way could be distinguished. These resemblances and differences relate to the red corpuscles, not only of different species of animals, but also to individuals of the same species. Although we constantly assume the existence of cellular differences between individuals and between species these are for the most part of so subtle a nature as to elude our methods of observation. The exact demonstration of such differences by the use of cytolytic sera is, therefore, of especial interest. My assistant (Dr. H. F. Marshall), in an unpublished research conducted under the direction of Professor Ehrlich and Dr. Morgenroth upon the receptors of the red blood corpuscles of man and of two species of monkey, found that while man and the monkeys each have receptors not shared by the other they also have a large number of receptors in common. This result is in harmony with Nuttall's interesting observations on a much more extended scale regarding phylogenetic relationships between animal species as shown by the reaction of their blood with the specific precipitins discovered by Tchistowitch and Bordet and introduced into practical medicine by Wassermann. This biological test to determine the source of blood, when used with proper precautions, far surpasses in accuracy all other methods for this end. While it would lead too far from my purpose to follow this subject further, I cannot in this connexion forbear at least mentioning one of the earliest and most suggestive papers on this class of anti-bodies—that on Immunity against Proteids, by Walter Myers, who gave up his life in the cause of science and of humanity and whose early death is so great a loss to English medical science.

I shall ask your attention now to some considerations concerning the bearing of recent studies of immunity on the nature and action of toxins, a subject which is, of course, of the greatest pathological as well as bacteriological importance. The discovery by Roux and Yersin of the diphtheria toxin, the studies by Behring and Kitasato of tetanus toxin leading up to Behring's epochal discovery of antitoxin, and the later investigations of Ehrlich on the constitution of diphtheria toxin and the origin and mode of action of antitoxin are the great events in the most brilliant and securely-founded chapter of modern studies of immunity. Through these researches we became acquainted with a class of poisons secreted by certain bacteria and present in solution in culture fluids. The evidence is conclusive that these soluble toxins enter, as assimilable substances, into direct combination with constituents of the body cells for which they have an affinity, and only thereby are enabled to bring about immunity or to exert toxic effects. As shown by the modifications of toxins called toxoids, the toxic property may be destroyed without loss of the combining power and without removal of the immunising power. According to Ehrlich's helpful conception, based on a large amount of experimental evidence and now very generally accepted, the combining power of the toxin molecule resides in a group of atoms, designated as the haptophore group, with affinity for the corresponding haptophore groups of the side-chains or receptors of cellular constituents, and the toxic power pertains to another and less stable atomic complex in the molecule. By means of these facts and legitimate deductions from them we are enabled to explain in a satisfactory way susceptibility to poisoning by these soluble toxins, their selective action upon the cells of the body, and their quick disappearance after injection into the circulating blood. In one infectious disease and in one only, to wit tetanus, are we able to explain the clinical and pathological phenomena in minute detail on the basis of our knowledge of the causative micro-organism and its poisonous products. The nearest approach to this example is diphtheria, but here we have not yet been able to follow the trail of the toxins within the body so perfectly, and, as Flexner and I have shown, in addition to the soluble toxins there is an intracellular poison concerned in the production of the false membrane. Interesting investigations, which have greatly helped to elucidate the nature of these toxins, have been made on various similar vegetable and animal poisons, such as ricin and abrin from the former source, and the venom of snakes, spiders, and other poisonous animals.

The high hopes which were raised by the discovery of the soluble bacterial toxins that at last the way was opened for us to penetrate into the mysteries of the mode of action of pathogenic bacteria were soon doomed to disappointment, for similar powerful toxins, though diligently sought, could not be detected in the cultures of most other bacteria, and

* The general procedure followed in the production of specific sera is the injection into a suitable animal at intervals of time repeated doses of toxins, bacteria, foreign cells, or other material against which the anti-body is desired. For example, if a specific precipitating or a hæmolytic serum for human blood is wanted, an animal—say a rabbit—is injected subcutaneously or intraperitoneally at intervals of three or more days with five or six doses of human serum or human red blood corpuscles. At the end of this time the rabbit's serum has acquired the property of precipitating human serum in strong dilutions or of dissolving human red blood corpuscles if these were used for the injection. Within limits the less closely related the two species of animals the more powerful is the antagonistic effect of the specific serum. This is true especially in the case of cytotoxic sera.

[9] Durham: Journal of Experimental Medicine, Jan. 15th, 1901, vol. v., p. 353. Ehrlich and Morgenroth: Berliner Klinische Wochenschrift, May 27th, 1901, p. 570.

[10] See papers on Paratyphoid Fever, by Johnston, Hewlett, and Longcope in the American Journal of the Medical Sciences, August, 1902.

these among the most important ones, such as the tubercle bacillus, the typhoid bacillus, the cholera spirillum, the pneumococcus, and the pyogenic micrococci. This disappointment was all the more acute because there was, and is, every ground for confidence that whenever we have in our possession a powerful toxin of this class a strong protective antitoxic serum can readily be obtained. Notwithstanding these negative results the belief was not abandoned that bacteria harm the body mainly by poisoning, for it rests upon strong clinical and pathological evidence, as well as upon the study of the distribution of bacteria in the infected body. The search for poisons was turned from the fluid part of cultures to the bacteria themselves and thus Pfeiffer succeeded in demonstrating as an integral constituent of the bodies of cholera spirilla toxic substances which are liberated only when the bacteria degenerate or die. Intracellular poisons, which indeed previously, though of a different nature, had been extracted from bacteria by Buchner and by Koch, were subsequently found within typhoid bacilli and a number of other pathogenic bacteria.

It is of more than purely bacteriological interest to recognise the distinction between the small group of pathogenic bacteria, represented by the bacilli of tetanus, of diphtheria, and of botulism, characterised by the secretion of powerful soluble toxins, and the much larger group, containing most of the other pathogenic bacteria, which do not secrete similar strong toxins, for it is only the former which give rise to the production of antitoxic sera of marked protective and curative power. The form of immunity resulting from injections or natural infections with the second class of bacteria belongs mainly to the bacteriolytic type, in which the complete anti-body is not a single substance like antitoxin but is composed of two distinct elements, intermediary body and complement, of which only the former is produced or increased in the process of immunisation. The bacteriolytic sera are also under suitable but not readily controlled conditions protective and curative, but owing, it would seem, mainly to the duplex nature of the anti-body their successful therapeutic application meets difficulties which have not yet been overcome. The great practical problem of bacteriology to-day is to make available to medical practice the bacteriolytic sera, such as anti-typhoid, anti-pneumococcic, anti-streptococcic, anti-plague, and anti-dysentery sera. Such work as that of Marmorek, of Wassermann, of Neisser and Wechsberg, and of Ainley Walker upon the production, the properties, and the conditions underlying the action of these sera is therefore highly important.

Our knowledge of the constitution and action of the intracellular bacterial poisons is most incomplete and at present cannot be applied in any very definite and satisfactory way to the explanation of the morbid phenomena of infectious diseases. Such investigations as those undertaken by Macfadyen and Rowland at the Jenner Institute of Preventive Medicine upon the expressed juices of bacterial cells promise to shed light upon this subject and in general upon the vital processes of bacteria. I find it difficult to reconcile myself to the doctrine that bacteria such as the typhoid bacillus, the pneumococcus, and others of the class now under consideration, do their chief injury to the body, not while they are lively and vigorous, but after they become corpses and in consequence set free their protoplasmic poisons. Still this latter conception is the basis of a coherent hypothesis of infection, elaborated most fully recently by Radzievsky,[11] which rests upon a considerable amount of accurate observation and interesting experimental work. There can be no doubt that in the course of many infections there goes on an enormous destruction of the bacteria concerned, so that the numbers of those indicated at any given time by microscopical examination and by cultures may represent only an insignificant fraction of the total progeny of the first invaders. I have been much interested in this phenomenon since I became familiar with it over 12 years ago[12] in pneumococcic infections through the employment of a method which revealed in the exudates degenerating and dead pneumococci and their empty capsules in numbers often far exceeding the intact organisms—indeed, in some cases so many that they formed a large part of the exudate.

While all due weight should be given to such facts as these the objections to the acceptance of the hypothesis just mentioned as affording a complete explanation of the toxic phenomena of this class of infections are so obvious that naturally efforts have been made to learn whether bacteria which produce no strong soluble toxins in our ordinary culture media may not do so on other media of special composition or in a demonstrable way within the living body. Work in these two directions has not been altogether barren as shown by results of experiments made by Hueppe, Cartwright Wood, Marmorek, and others, along the former lines, and by Metchnikoff, Roux, and Salimbeni, along the latter, but it cannot be said that these experiments have led to any generally accepted solution of the main difficulties. Some are therefore inclined to lay the chief emphasis upon disordered cellular metabolism, but this is only a restatement of the question. Everybody recognises abnormal metabolism as an essential condition in infections. The very point needing explanation is how the bacteria derange metabolism.

I wish here to advance a hypothesis which seems competent to explain the source, the mode of production, and the nature of certain bacterial toxins. It would appear to be a natural inference from the receptor theory of Ehrlich and the recent work on cytotoxins. The following considerations will, I hope, make clear the essential points.

As I have already stated, we know that the injection of foreign cells, such as pathogenic bacteria, red blood corpuscles, spermatozoa, and epithelium, into the tissues of an animal leads to the formation of poisons called cytotoxins acting specifically upon these cells; that the substances which stimulate the cells of the host to produce one constituent of this class of toxin consist of certain atom-complexes derived from the injected cells; that certain cells of the host thus stimulated generate and discharge one component of the toxin called the intermediate body, which, although by itself not poisonous, becomes the medium of intoxication through union, on the one hand, with a pre-existent toxophore substance, called the complement, and, on the other hand, with the foreign cell which started the reaction. Such is the response on the part of the host to the entrance of the foreign cells; but how about a possible response of a like nature on the part of the invading cells toward the host, resulting in the production of special cytotoxins, of analogous constitution, injurious to the host? This latter response, being of a vital nature, can take place only when the invading cells are living, as in the case of bacteria and other parasites. I see no reason why suitable substances derived from the host may not stimulate parasitic organisms, through a physiological mechanism similar to that operative in the development of cytolytic immunity, to the production of intermediary bodies which, if provided with the requisite affinities, have the power to link complements to cellular constituents of the host and thereby to poison the latter. Expressed in terms of Ehrlich's side-chain theory, certain substances of the host of cellular origin, assimilable by the parasites through the possession of haptophore groups with the proper affinities, become anchored to receptors of the parasitic cell, which, if not too much damaged, is thereby stimulated to the over-production of like receptors; these excessive receptors of the parasite, if cast off into the fluids or the cells of the host, constitute intermediary bodies or amboceptors with special affinities for those cellular constituents or derivatives of the host which led to their production and for others which possess in whole or in part identical receptors. Provided the host is supplied also with the appropriate complements there result cytotoxins with special affinities for certain definite cells or substances of cellular origin in the host. The contribution of the parasitic cells to these cytotoxins is the amboceptors. Either the parasite or the host may provide the complements.[13]

It may perhaps aid in grasping the ideas here presented to imagine the bacterium, in the capacity of the host, as a structure so large that one could inject into it animal cells. Provided the proper receptor apparatus is present, the resulting reaction on the part of the bacterium, as described, would be a process of immunisation against the animal cells through the formation of specific cellulicidal substances. In reality it is only certain atomic complexes of cells which are

[11] Zeitschrift für Hygiene, 1900, Band xxxiv., p. 185, and 1901, Band xxxvii., p. 1.

[12] Welch: Bulletin of the Johns Hopkins Hospital, July, 1890, and December, 1892. Michaelis (Berliner Klinische Wochenschrift, 1902, No. 20) has recently reported the same findings.

[13] We may thus speak of somatogenic cytotoxins resulting from the action of bacterial stimuli on cells of the host, and of bacteriogenic cytotoxins from somatogenic stimuli, also of somatogenic and bacteriogenic complements.

concerned in this immunising reaction, and in comparison with these even the smallest bacterium is a gigantic object. Looked at from the point of view of the bacterium as well as from that of the animal host, according to the hypothesis advanced, the struggle between the bacteria and the body cells in infections may be conceived as an immunising contest in which each participant is stimulated by its opponent to the production of cytotoxins hostile to the other, and thereby endeavours to make itself immune against its antagonist. These mutually antagonistic cytotoxins are capable of injuring the parasitic cells, on the one hand, or the body cells on the other, only when, escaping combination outside of them, they are anchored to the receptors of the cells to which their respective affinities are adjusted. This combination with the cells, if it does not result in too great injury to them, is the condition for further production of the cytotoxic intermediary bodies through over-production and discharge of receptors.[14]

The important factors determining the issue of the contest are the relative proportions and the distribution of the bacterial and the host's cytotoxins. The hypothesis thus outlined can be tested experimentally, but I regret that it has shaped itself in my mind so recently that I have not yet been able to make the desired experiments, which are, however, now started in my laboratory. Since my arrival here I am informed that these experiments have already furnished facts in its support which will be published later.

[Professor Welch here enumerated several theoretical considerations which support his hypothesis. He then at considerable length discussed the action of snake poison (venom toxins), chiefly in the light (1) of the researches of Flexner and Noguchi now in progress, of which only the first part has been published, and (2) of the researches of Preston Kyes.[15] Other workers in this field have been Weir Mitchell, Reichert, Sewall, Calmette, and Fraser. Flexner's investigations were made in his laboratory in the University of Pennsylvania. The results obtained by him and Noguchi necessitate a conception of the nature and manner of action of venom toxins quite different from that previously entertained and they show that the toxic action of venom upon red blood corpuscles, leucocytes, nerve cells, and other cells is like that of the duplex cytotoxins already described. Preston Kyes, a former pupil of Professor Welch, working in Professor Ehrlich's laboratory, confirms the conclusions of Flexner and Noguchi concerning the amboceptor nature of venom and adds much to our knowledge of the subject. The objections made by Calmette[16] to Flexner and Noguchi's interpretation of their experiments as to the amboceptor nature of venom have been completely overthrown by the experiments of Preston Kyes. That snake venom should contain only one half of the complete poison, the other and the really destructive half being widely distributed in the blood and cells of man and of animals, is an instance of a curious kind of adaptation, of interest from evolutionary as well as other points of view. Professor Welch then made a reference to several bacteria toxins, especially the hæmolysins, discovered by Ehrlich in 1898, after which he continued as follows:—]

In view of the abundant clinical and pathological evidence of extensive destruction of red corpuscles in the course of many infectious diseases, it is certainly significant to find that many bacteria are endowed with a specific hæmolytic power. The question is how far we are justified in applying to the actual conditions of infection the existing experimental data upon this subject. Assuredly here, as everywhere, results of test-tube experiments, helpful in suggestion as they may be, should not be utilised without further evidence to explain morbid phenomena within the infected human or animal body. While much more work upon this subject is needed before our information will be exact or complete the observations and experiments of Besredka,[17] Kraus and Ludwig[18] and others have already demonstrated that bacteria may exert their blood-destroying power within the living body. This hæmolytic capacity of micro-organisms affords an explanation, although certainly not the only one, of the secondary anæmias which are such a marked feature of many infectious diseases, as streptococcic and other septicæmias, pneumonia, typhoid fever, scarlet fever, and others. The hæmoglobinuria which is a recognised although rare complication of various infectious diseases may be referable to intoxication with unusually powerful bacterial hæmolysins or to an exceptional lack of resistance of red corpuscles. Hæmoglobin, however, is not necessarily present in solution in the blood plasma, for the destruction of the damaged red corpuscles may take place within the large phagocytes of the spleen and the hæmo-lymph glands, as is well known to occur on an extensive scale in typhoid fever and some other infections. A familiar example of the action of bacterial hæmolysins is the post-mortem reddening of the inner lining of the heart and blood-vessels, an effect which may be due to putrefactive bacteria or may appear very soon after death, especially from septicæmia caused by streptococcus pyogenes which, as has been shown, may lake the blood during life.

The fact that certain common saprophytic bacteria may produce energetic hæmolysins, as pointed out by Kraus and Clairmont and by Todd, has a possible bearing upon the etiology of certain obscure anæmias not of infectious origin, particularly upon the interesting observations and the theory of William Hunter concerning their causation by absorption of toxins from the alimentary tract. Todd found cultures of bacillus megaterium so strongly hæmolytic that the intravenous injection of one cubic centimetre of the filtrate into guinea-pigs was followed by hæmoglobinuria, 10 cubic centimetres being fatal. Human red corpuscles are sensitive to this hæmolysin.

Normal human and other blood sera contain in varying amounts anti-hæmolysins, which protect the red corpuscles from the action of some of the bacterial hæmolytic agents. Specific anti-hæmolysins are readily produced by immunising injections of bacterial hæmolysins and are generated also in the course of infections. Lang suggests that the augmentation of the osmotic resistance of the erythrocytes which has been noted in some infectious diseases, as well as in icterus and some other morbid conditions, may be a reactive phenomenon caused by the presence of hæmolytic toxins.

Intimately associated with the hæmolysins in cultures are the bacterial hæmagglutinins (Kraus and Ludwig[19]), substances which have the power to clump red blood-corpuscles. Among unicellular organisms both the capacity to produce agglutinins and the aptitude for agglutination seem to be very widely distributed. The bacterial hæmagglutinins, in analogy with the bacterial hæmolysins, are apparently of simpler constitution than the serum agglutinins, being destroyed at 58° C., whereas the latter are not injured by temperatures under 70° C. In order to demonstrate in cultures the hæmagglutinins it is generally necessary to eliminate in some way the action of the associated hæmolysins, which can be done by using small quantities of the culture fluid or by keeping the mixture of fluid and red corpuscles at zero temperature.

[14] It will be observed that these discharged receptors may be regarded as the equivalents of anti-immune bodies. E. W. Ainley Walker in an interesting and suggestive paper on Immunisation against Immune Sera (Journal of Pathology and Bacteriology, March, 1902), shows experimentally that bacteria growing in immune sera produce anti-immune bodies and thereby become more virulent. He concludes that "the basis of bacterial virulence and of chemiotactic influence is identical, and constitutes that atom group which causes the production of the immune body." My hypothesis includes the conception supported by Walker and also much more. According to the hypothesis certain bacterial anti-bodies are capable not only of neutralising immune bodies of the host but with the aid of complements also of poisoning the cells of the host. It is not difficult to imagine various conditions in which the anti-bodies of bacterial origin may escape neutralisation before entering into union with the cells of the host. The substances which stimulate bacteria to produce these anti-bodies need not necessarily be toxic to them; in fact toxicity, such as that of strong bactericides of cellular origin, would hinder their production. The essential things are that the stimulating substances have the requisite combining groups for bacterial receptors and that the cast-off receptors are complemented within the body of the host. Each of the various bacteriogenic cytotoxins probably contains a multitude of partial amboceptors with varying cytophilic and complementophilic affinities, in accordance with the views of Ehrlich and Morgenroth. It is self-evident that through a mechanism similar to that described parasites within the infected body may be stimulated by atom groups derived from the host to the production also of anti-bodies other than cytotoxins, such as various agglutinins, precipitins, anti-enzymes, and perhaps of unicceptors of the nature of secreted, soluble toxins, or of enzymes, all adjusted against the host. Questions relating to the source and nature of the complements, particularly of intra-cellular complements, and also to anti-complements, are manifestly of importance in relation to the hypothesis, but it would complicate the subject too much to discuss these and other matters here, where my purpose is merely to outline the essential features of this new theory of infection with reference to the particular points under consideration.

[15] Flexner and Noguchi: Snake Venom in Relation to Hæmolysis, Bacteriolysis, and Toxicity. Journal of Experimental Medicine, March 17th, 1902, vol. vi., p. 277. Preston Kyes: Ueber die Wirkungsweise des Cobragiftes. Berliner klinische Wochenschrift, 1902, Nos. 38 and 39.

[16] Comptes Rendus de l'Académie des Sciences, 1902, tome cxxxiv., No. 24.

[17] Annales de l'Institut Pasteur, 1901, tome xv., p. 880.

[18] Wiener Klinische Wochenschrift, 1902, p. 382.

[19] Wiener Klinische Wochenschrift, 1902, p. 120.

I know of no observations directly demonstrative of the action of bacterial hæmagglutinins within the living body in infections, but this subject is of such recent knowledge that it has been as yet scarcely investigated. Certainly, there are morbid conditions which seem highly indicative of the operation of substances agglutinative of red corpuscles. Probably everyone with large experience in the examination of fresh blood in disease has noticed that sometimes red corpuscles examined immediately after withdrawal of the blood have a peculiar tendency to form clumps which cannot readily be broken up. This phenomenon, which is certainly suggestive of the action of an agglutinating agent, I have observed especially in some cases of septic infections and of cirrhosis of the liver. Furthermore, I would emphasise the support given by the recognition of hæmagglutinins to views advocated many years ago by Hueter and by Klebs concerning the occurrence of thrombi composed of coalesced red blood corpuscles. Such thrombi I believe to be not uncommon in typhoid fever and other infections, especially in small blood-vessels. I have elsewhere called attention to the evidence in favour of the interpretation of many of the hyaline thrombi as derived from agglutinated red corpuscles

[Professor Welch here continued his discussion of bacterial and animal toxins, mentioning with regard to the causation of the lesions of typhoid fever his suggestion that the typhoid bacillus produces a lympho-cytotoxin and a hæmolysin, and that the proliferation of the fixed cells is partly compensatory and partly for the increased production of macrophages. He quoted the work of Levaditi, Neisser and Wechsberg, Flexner, Fisher, Muscatello and Ottaviano, Belfanti and Carbone, and several others, after which he proceeded as follows:]

It is especially gratifying to note the close convergence of the two doctrines of immunity, the cellular and the humoral, brought about by these recent discoveries. On the one hand, the phagocytic school, represented so brilliantly by Metchnikoff and his co-workers in the Pasteur Institute, recognise and apply to the fullest extent in the explanation of acquired immunity the cytolytic principles based upon the coöperative action of intermediary bodies and complements. On the other hand, the humoral school, led by our German *confrères*, which has been so fruitful in results of the greatest scientific and practical value, recognise the cells, and especially the leucocytes and other cells of the blood-forming organs, as the immediate source of the protective substances. There are many differences in details, especially in terminology and in interpretation, which make the divergence seem greater than it really is. The essential difference between the two schools concerns the place where the two forces, intermediary body and complement, unite. All are agreed that the intermediary body exists free in the blood plasma, but Metchnikoff strenuously insists, especially on the basis of Gengou's experiments, that the complement or cytase is within the leucocytes, from which it is not secreted but can be liberated only through damage to these cells. This question certainly needs further investigation before it can be regarded as settled.

The deeper insight which we have recently gained into the nature of the forces concerned in immunity makes especially desirable the systematic study of the blood and other fluids of human beings in health and in disease with reference to their content of specific anti-bodies, particularly of the bactericidal substances. It can scarcely be doubted that knowledge of this kind will be in various ways of practical value to the physician and surgeon. The simplest procedure, and the one hitherto generally adopted, is the estimation of the bactericidal power of the blood serum *in toto*. For this purpose Professor A. E. Wright[20] has devised an ingenious method which in his hands has furnished extremely interesting information concerning variations in the bactericidal power of the blood as regards the typhoid bacillus in health, under the influence of fatigue, in the course of typhoid fever and after anti-typhoid inoculations. The older methods, however, while not without value, do not inform us of the total content of the blood in immunising substances, and have led to very discordant results, particularly as to the influence of infection upon the bactericidal power. Thus Conradi[21] finds, in opposition to most previous experimenters as well as to the later results of Wilde, that infection with the anthrax bacillus does not at any stage influence materially the bactericidal properties of the blood.

A useful and readily applicable method for the determination separately of the intermediary bodies and of the complements of human serum is urgently needed. When one takes into consideration the plurality of complements and of intermediary bodies, the fallacies of interpretation which may arise from failure to take account of anti-complements, of anti-immune bodies, of complementoids, of amboceptoids, of deviation (*Ablenkung*) of complements, and other principles in this complicated subject, it is clear that the problem is not an easy one. Notwithstanding these difficulties work has already begun along these new lines and has led to interesting results. We know that the content of the blood in specific anti-bodies, and especially in complements, varies in significant ways under diverse conditions, as in infancy and in adult life, in health, in different states of nutrition, under the influence of fatigue, of inanition, of pain, of interference with respiration, of alcohol, and in disease. The infant comes into the world with protective anti-bodies in the blood smaller in amount and less energetic than those possessed by the healthy adult. It is an important function of the mother to transfer to the suckling through her milk immunising bodies and the infant's stomach has the capacity, which is afterwards lost, of absorbing these substances in an active state. The relative richness of the suckling's blood in protective anti-bodies, as contrasted with the artificially fed infant, explains the greater freedom of the former from infectious diseases.

The important question of the influence of pre-existent disease in predisposing to infection has been brought nearer to a solution by recent studies of immunity. Schütze and Scheller[22] have demonstrated that, while the normal rabbit promptly regenerates the complements used up in consequence of the injection of hæmolytic serum, a rabbit infected with the hog cholera bacillus has lost this capacity. My former pupil, Dr. Longcope, has kindly placed at my disposal the unpublished results of an investigation which he is making under Professor Flexner's direction at the Pennsylvania Hospital of the intermediary bodies and the complements in human blood in different diseases. Colon and typhoid bacilli are used as the tests, as unless one accepts Bordet's doctrine of the unity of complements, it is more important for the study of problems of infection to determine bacteriolytic rather than hæmolytic anti-bodies. One of the earliest results of the systematic bacteriological examinations which we make at all necropsies at the Johns Hopkins Hospital was the recognition of the great frequency of terminal infections, formerly often undetected by the clinician, in chronic diseases, particularly of the heart, the blood-vessels, and the kidneys. Dr. Longcope finds, although not regularly, still in many cases of these diseases, a marked reduction in the quantity of complements, which may amount to a total loss of the colon complements. The analysis of the cases brings out unmistakeably a definite relation between this loss of complement and the predisposition to infection. The study of a series of acute infections, chiefly of a surgical nature, shows that in the course of the infection complements are being constantly used up and regenerated, and that at any given time there may be an excess or a reduction of the bacteriolytic power of the blood. Thus far it has been found impossible in these acute infections to attach any prognostic significance to the amount of complement or of bacteriolytic power, nor could any definite relation be determined between the leucocyte count and the content of complements.

The researches on immunity, which to some of short vision once seemed to threaten the foundations of cellular pathology, have served only to strengthen them. These researches, which have already led to the saving of thousands of human lives and will lead to the saving of untold thousands more, have been carried on by the experimental method and can be conducted in no other way. This method is as essential for the advancement of medical science as for that of any of the natural or physical sciences. To restrict unnecessarily and unjustifiably its use is nothing short of a crime against humanity. It is an evidence of the robust vitality of English physiology and medicine that in spite of unwarrantable obstacles thrown in their path their contributions to science in recent years have been so numerous and so important. The influence of English thought and action is great with us in America. See to it,

[20] THE LANCET, Jan. 8th, 1898 (p. 95); Dec. 1st, 1900 (p. 1556); and March 2nd (p. 609), June 1st (p. 1532), and Sept. 14th (p. 715), 1901.
[21] Zeitschrift für Hygiene, 1900, Band xxxiv., p. 185; 1901, Band xxxviii., p. 411.
[22] Zeitschrift für Hygiene, 1901, Band xxxvi., pp. 270 and 459.

my colleagues and men of science in these British Isles, that you retain for yourselves and hand down to your successors at least without further impairment the means of promoting medical knowledge and thus of benefiting mankind.

RATS AND PLAGUE.

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THE following notes on the outbreak of plague in Port Elizabeth in 1901 are contributed for the purpose of showing the part played by rats in the dissemination of the disease. The cases given in detail are those that occurred from the beginning of the outbreak on April 16th to July 30th.

On April 12th six dead rats were found in a stack of mealies (maize) on Harbour Board property at the foot of Jetty-street. These mealies came from the River Plate and were discharged from the vessel in March. A second stack of mealies adjoining the one already mentioned was subsequently found to contain some dead rats. These mealies also came from the River Plate, but by another vessel, and were discharged in February. The piece of ground on which the mealies were placed is close to the jetty and is surrounded by Harbour Board sheds and stores. The mealies as well as a quantity of oats and forage stacked on this area belonged to the military authorities. One of the rats found on April 12th was examined by Dr. A. Edington, the Government bacteriologist at Grahamstown, who found considerable numbers of plague bacilli in the organs, and a guinea-pig inoculated from this rat died from plague.

CASE 1.—April 16th. The patient was a Kafir labourer who had been working on the stacks of mealies standing on the area mentioned. He lived in a large native location outside the town and probably two miles in a direct line from where he worked. No other case of plague had occurred in this location up to the time of my leaving Port Elizabeth on August 21st.

CASE 2.—May 6th. The patient was a Kafir labourer. Between April 12th and May 6th numerous dead rats were found in the area on which the stacks were standing and some were found in all the stores bounding this area. This second patient had been working in these stores. Some of the rats found dead were subjected to bacteriological examination and were found to be infected with plague. This man lived in a second location, about half a mile from the one where the patient in Case 1 was found, but the length of time that elapsed between the two cases shows that the second patient was not infected from the first. No second case of plague occurred subsequently in this location.

CASE 3.—May 20th. The patient was a European staff sergeant who worked in "I" store, one of the Harbour Board stores already mentioned as forming the boundary to the infected piece of ground. He was taken ill on May 17th and it was then discovered that for some little time previously he had been sleeping and taking his food in this shed contrary to orders. Dead rats were found in the shed some days prior to the date on which this case occurred; none of these were examined, but about this time rats were reported to be dying in the searcher's office at the Custom House, a building situated within a few feet of one of the mealie stacks near the jetty and only a few yards from the above-mentioned store, and on May 17th a rat was seen to come out of its hole in the searcher's office and to die on the floor. This rat was examined and was found to contain plague bacilli.

From the date of finding the first case of plague the military and Harbour Board authorities instituted a vigorous crusade against rats. Disinfectants were also freely used about all the sheds, the floors being regularly scrubbed with disinfectants. Fences were erected around the stacks of grain and forage with a view to confining the infected rats within them and as the grain and forage were removed all rats found were killed and the ground was covered with lime. The rat-catcher appointed by the military authorities succeeded in catching a large number of rats. After about the end of May very few rats were to be found either among the grain or in the shed and the three cases of plague already mentioned were the only ones traced to this primarily infected area. Up to this time dead rats had not been reported from anywhere in the town excepting the area from which the patients in Cases 1, 2, and 3 came and it was hoped that by fencing in the stacks after infected rats had been found amongst them the infection might be limited to this area, but the attempt so to limit the infection failed.

CASE 4.—May 19th. This patient was a Cape coloured female, living in a good quarter of a town a considerable distance from the infected area. The source of infection in this case was never traced.

CASE 5.—May 25th. The patient, a native storekeeper, was taken ill on May 24th. He lived in a portion of the town known as the Strangers' Location. It is situated probably a mile from the infected area already referred to and, unlike the other native locations, is within the town. Some of the "contacts" in this case reported that dead rats had been found in the shop and yard a short time previously. When the floors of the house were taken up three dead rats were found, one being underneath the floor of the room in which the patient slept. Unfortunately, these were destroyed immediately by the inspectors. The patient stated that he obtained most of his goods from one of the large stores in the main street of the town, and in this store a case of plague occurred on June 13th.

CASE 6.—May 30th. This case occurred in a Kafir boy who worked in a barber's shop in Jetty-street. This shop is situated about 60 or 70 yards from the store in which Case 3 occurred and is in the same street as the front of the Custom House referred to under Case 3 and about 40 yards from it. The barber's shop was on the ground floor of a large store and in this store dead rats were found some days before the boy was taken ill. One of these rats, examined on May 27th, contained plague bacilli. The shop in which the patient worked is situated north-west of the original area of infection, and it seemed from the reports about dead rats received at this time that the infected rats were making their way northwards through the town and this idea was confirmed by subsequent events.

CASE 7.—June 3rd. The patient in this case was a male Fingo living in Strangers' Location and working in a store within a few yards of the place where Case 6 occurred.

CASE 8.—June 10th. The patient was a male Kafir working in a private store close to the original area of infection. This man lived in Reservoir Location which is situated some distance outside the town and nearly three miles from the jetty.

Although no dead rats were reported from the stores in which the patients in Cases 7 and 8 worked there were infected rats in adjoining stores, as shown under Case 6.

CASE 9.—June 14th. The patient was a male Kafir working on one of the lighters employed in carrying cargo between ships in the bay and the shore and was seen on June 14th. He lived at the extreme north end of the town in a place known as Vlei Post. No previous case of plague had been reported within two miles of this place. On June 8th about 30 dead rats were found in a small stable in a timber-yard situated not far from the place where this patient is said to have lived. An examination of one of these rats disclosed numbers of plague bacilli. The forage was then turned out of the stables and the bodies of 170 rats and mice were found. Most of the rats had been dead for some time. How infected rats reached this part of the town still remains a mystery. Shortly after these rats were found a boy who had been working in the stables was reported to be away from work ill and he is said to have died a day or two later in a village outside the town, but his body was never found and is supposed to have been buried on the veldt by relatives.

CASE 10.—June 15th. The patient was a European male working as a packer in a large private store in the main street of the town. This store is within a few yards of the place where Case 6 occurred. The patient was taken ill on June 13th. Seven or eight days before this a case of caps in the store was found to contain rats' nests. The caps were badly gnawed by the rats, and a dead rat found on June 8th in this case was sent for examination and was ascertained to contain plague bacilli. The patient and a native boy were sent to turn out these caps and to sort out the damaged ones with a view to their being destroyed. The European contracted plague and developed a femoral bubo; the native did not contract plague. It was from this store that the patient in Case 5 obtained most of his goods, and it seems probable that by means of these goods, or more probably by the carriage of an infected rat amongst them, plague was introduced among the rats in Strangers' Location.

CASE 11.—June 19th. The patient was a male Kafir working as a storeman in one of the largest stores in the town situated not far from the stores mentioned in Cases 6, 7, and 10, and living in Strangers' Location. He was taken ill on June 16th. No rats were found in his house and none were reported from the store in which he worked, but undoubtedly there were infected rats in the immediate vicinity of this store, as already shown, and there were probably also infected rats in the vicinity of the house.

CASE 12.—June 20th. The patient was a Cape coloured boy employed as a stable-boy in Sea-lane. This lane is situated about a quarter of a mile north of the store mentioned in Case 10. On June 17th a dead rat was found in the stable and it contained plague bacilli. The boy slept in a small room off the coachhouse attached to the stable. The coachhouses and room were thoroughly disinfected and cleansed. Two other stable-boys who worked with the patient were inoculated on June 22nd with Yersin's serum. One of these contracted plague on July 4th, as detailed below.

CASE 13.—June 22nd. The subject of this case was a Kafir girl, aged 14 years, whose body was taken to one of the plague officers. The place of residence was never ascertained but the mother of the girl worked as a washerwoman in the south end of the town and the girl assisted her. In the vicinity of some of the places where the mother and child are said to have worked dead rats were found in the street (see Cases 25 and 29).

CASE 14.—June 23rd. The patient was a Polish Jew who was out of work and who lived in a second-rate store at the north end of the town. Most of the clothes in the store were bought at sales in Queen-street which lies within a rat-infected area. No previous case of plague had occurred in the immediate vicinity of the patient's dwelling.

CASE 15.—June 23rd. The patient was a European male, aged 19 years, working as a storeman only a short distance from the place in which Case 6 occurred. He was taken ill on June 20th. He stated that previously to his illness dead rats had been found in the store where he worked. None of these, however, were submitted for examination.

CASE 16.—June 27th. The patient, a coloured boy working in a stable at the south end of the town was taken ill on June 24th. On May 22nd several dead rats had been found in a store within a few yards of this stable. One of them was examined and was found to contain plague bacilli. This store contained second-hand goods and the proprietor of the stable had complained on several occasions of the condition of the store and the number of rats to be seen about it.

CASE 17.—June 27th. This was the case of a European boy working as an office boy in Main-street. The stores at which this boy worked were infested with rats and dead rats were found on the premises the day after he was taken ill. One of these was submitted to examination and was found not to contain plague bacilli. There were, however, undoubtedly infected rats in the vicinity and probably in the stores, as the store from which the patient in Case 10 was removed was within a few yards of the place.

CASE 18.—July 2nd. The patient was a Kafir working in a store within 30 yards of the store in which the patient in Case 3 had lived. No dead rats had been reported from this store.

CASE 19.—July 4th. The patient was a European female living in the north end of the town and working in a shop in Main-street about 50 yards from the stables mentioned in Cases 12 and 22. Two dead rats were found in the store below the shop. These were not examined.

CASE 20.—July 5th. The patient, a Hindoo syce working and living in the military remount camp in the Show Yard at the north end of the town, was taken ill on July 3rd and was removed to hospital on the 5th. This syce slept on some forage in one of the stables, and on turning out this forage about 20 dead rats were found and one of these contained numerous plague bacilli. Most of the forage in this camp had originally been stored at the south end of the town, and it seems probable that infected rats were conveyed with the forage from the south end to the remount camp.

CASE 21.—July 6th. This patient was a Kafir working as a labourer in the market. The market is infested with rats and is not more than 70 or 80 yards from the area first found to be infected, but no dead rats were ever reported from the market. This man lived at the north end of the town, nearly three miles from his place of work and within a short distance of the stable mentioned in Case 9.

CASE 22.—July 6th. A Kafir male, working as a stable-boy in the same stable as the patient mentioned in Case 12, was taken ill on July 5th and was removed to hospital on the 6th. This was one of the persons inoculated with Yersin's serum on June 22nd. He slept in a corner of one of the stables. When the stables and coachhouses were cleared out about 50 dead rats were found. Some of these were in the partitions of the stalls of the stables in which this boy slept. Others were found under the floors of the rooms, in one of which the patient in Case 12 slept. One of the dead rats was examined on July 7th and was found to contain large numbers of plague bacilli. It will be remembered that an infected rat was also found in this place on June 17th.

CASE 23.—July 7th. The patient was a Kafir male working as a stable-boy and sleeping in the remount camp in the Show Yard. He was said to have been taken ill on July 3rd, the date on which the patient in Case 20 was taken ill. Under Case 20 will be found particulars of the dead rats found in this place on July 5th. As a result of these two cases of plague the whole of the Show Yard was evacuated and the persons living in it were removed into tents on the veldt outside. No further case of plague occurred amongst the persons so removed until July 30th, and the man who was then attacked was removed as a "contact" in this case and worked in the Show Yard assisting in the cleansing operations after he had been released from the contact camp.

CASE 24.—July 8th. In this case the patient was a European female, aged 13 years. The source of infection was not traced.

CASE 25.—July 9th. A coloured female, aged 11 years, living in the south end of the town, was taken ill on July 7th. On several occasions within the previous two or three weeks dead rats had been found in the street within a few yards of the house, but none of them had been examined.

CASE 26.—July 17th. The patient, a Hindoo living in the north end of the town, was taken ill on July 15th. There was evidence of rats in the house in which the patient lived. The actual source of infection was not traced.

CASE 27.—July 18th. The patient was a Hindoo hawker, living in a street a short distance east of Strangers' Location. A dead rat was found under the floor of his hut but there was no evidence that it died from plague. A plague-infected rat was, however, found in the street at the back of the patient's house on July 18th.

CASE 28.—July 19th. The patient was a male Kafir working on one of the lighters in the harbour and living at the north end of the town, about 100 yards from the stable mentioned in Case 9.

CASE 29.—July 20th. In this case the patient was a coloured boy living in the south end of the town. Some dead rats and mice were found under the floors of the house, but they were too decomposed for examination. This patient came from a house about 30 yards from that in which lived the patient in Case 25. In both cases the patients were children and no other cases had occurred in the neighbourhood. As mentioned under Case 25, dead rats had been found in the streets in the immediate vicinity.

CASE 30.—July 20th. The patient was a Kafir boy, aged 12 years, living at Strangers' Location. Dead rats were found in the streets in the vicinity of this house on July 10th and 13th, and in each case examination showed that they were infected.

CASE 31.—July 21st. This patient, a male Fingo working as a labourer in a store in Main-street, lived in the Reservoir Location and worked in an infected area, but no dead rats had been reported from the store in which he worked.

CASE 32.—July 22nd. This patient was a Japanese female. No definite information could be obtained as to the source of infection, but she frequented the street from which Case 27 came.

CASE 33.—July 30th. This patient, a male Fingo living in the horse kraals in the remount camp a short distance north of the Show Yard, was removed to hospital on July 30th and had probably been ill for three or four days. He was removed to the contact camp on July 7th in connexion with Case 23 and was released on the 19th. After this he worked he said, in cleaning out the stables in the Show Yard. These cleansing operations were undertaken by the military authorities in consequence of cases of plague (Cases 20 and 23) having occurred there.

I have detailed all the cases that occurred up to July 30th

to show that selected cases have not been picked out in order to strengthen the case against the rats. It seems unnecessary to detail more cases and I shall therefore content myself with giving the general results of the observations made on the cases that occurred during the remaining three weeks that I stayed in Port Elizabeth.

In connexion with Case 27 it may be noted that two other Hindoos living in the same street as, and close to, the patient mentioned in this case contracted plague, one on August 8th and the other on the 14th. The houses in which these two persons lived were opposite each other and there was frequent communication between the two places. The putrid bodies of six rats were found under the floors in the case of the last patient.

On August 14th a case came from Victoria-street, close to Strangers' Location, and two dead rats were found under the floors. A week later three cases, all of Chinamen, came from a small shop in the same terrace of houses and only two doors away. Under the floor some 20 dead rats were found and these were proved to be infected. At the time that these three cases were found another case occurred in a European boy living in a good-class house in the same street. The source of infection was not at the time apparent, but it was shown later that a few days before his illness the boy had been in the Chinese shop mentioned and was therefore there just about the time that the Chinese inmates contracted the disease. The relatives of the boy did not contract plague and no dead rats were found in the house in which he lived.

On August 18th a case occurred in a Kafir working and living in a plantation some distance, probably one and a half miles, south of the town. The workmen lived in three or four huts in the plantation and there were no other houses near the place. About the same time the European foreman working at this place and living in a part of Port Elizabeth from which no cases of plague had come and in which no dead rats had been found died from the disease, and a few days later another native working and living in the same place was taken ill. Dead rats were then found in some forage near the workmen's huts, and some of this forage is said to have come from an infected part of the town.

ANALYSIS OF CASES.

An analysis of the 33 detailed cases brings out further evidence to prove that rats were mainly, if not wholly, responsible for the spread of plague in Port Elizabeth, at any rate during the first four months of the outbreak. This analysis shows that:—

1. Relatives of patients did not contract the disease. In only one case did two members of the same family contract plague (see Cases 23 and 33) and in this case the idea that the infection was from man to man is negatived by the fact that the second patient was not taken ill until 20 days after contact with the first. But both patients worked at the same place and it has been shown to have contained infected rats.

2. "Contacts" did not contract plague. In only two cases did "contacts" of these 33 plague cases contract plague. One case was that just mentioned and the other was Case 22, and in this latter case again the second patient was not taken ill until 14 days after the removal of the first (Case 12) and both patients worked and slept in the same rat-infected dwelling.

3. Neighbours of plague patients did not contract the disease. Had the infection been from man to man the house in which a plague patient lived would have shown itself a centre of infection by persons living in adjoining houses and who frequented the patient's house becoming infected, but this never occurred except where dead rats were found in the patient's dwelling-house.

4. The dwelling-houses of the patients were widely separated, but nearly all the patients worked in the same rat-infected area. The 33 cases were widely scattered over the town as regards the dwelling-places of the patients and there was not the slightest evidence in the earlier cases of plague that any patients contracted the disease in their own homes. As already stated, the "contacts" did not contract the disease and the houses in the vicinity of those in which plague patients lived did not become infected until such time as plague rats appeared in the houses in their immediate neighbourhood. But nearly the whole of the patients—29 out of 33—worked in the area which was proved by bacteriological examination to contain infected rats. It was only when infected rats made their way to the residential portion of the town that cases of plague began to appear amongst persons who did not work in the business part of the town where infected rats first appeared. Of the first 23 cases only one person did not work in a rat-infected area. This exception was a coloured servant and it was the only case out of the 23 where a patient who worked in the same place as he lived contracted plague, and up to this time only two children had contracted the disease and both of these worked in the infected area. But as the infected rats were traced to the residential part of the town cases began to occur amongst people who did not work in the town and this is shown by the fact that out of the next 21 cases eight were those of children under 13 years of age. In no case did any relatives or "contacts" in these eight cases contract plague, while in all cases dead rats—in some cases proved to be infected—were found either in the houses in which patients lived or in their vicinity. The southern part of the town is separated from the northern by a stream called the Baakens river, and dead rats were found in only two places south of this river, one place being a store and the other in the extreme eastern part of the area. One case (Case 16) occurred within a few yards of the store mentioned, two others occurred in houses situated in streets in which dead rats were found, and one other patient in this area had been working, and probably sleeping, close to where the rats were discovered. The rats in the store were found by examination to be infected. No other cases of plague were found in this part of the town south of the Baakens river. Most of this area is thickly populated by natives and all the conditions are favourable to the spread of plague if it is conveyed by man-to-man infection. Yet the cases were confined to one part of the area and to that part in which alone dead rats had been found.

A general survey, then, of the course pursued by plague in Port Elizabeth up to August 21st shows that the disease began in rats found in maize stacked close to the jetty at which most of the goods from over sea are received, and this maize had come from an infected port. As long as dead rats were found on this area cases of plague were traced to it; when dead rats ceased to be found no further cases of plague were traced to this part. Infected rats then made their way along a narrow strip of land lying between the main street of the town and the sea and as they passed northwards cases of plague followed in their wake. Again, in this area when dead rats ceased to be found plague cases ceased to occur. Infected rats were then discovered in four different parts of the town—viz., at the extreme north end, at the extreme south end, in the Strangers' Location near the middle of the town, and in the remount camp. At the same time cases of plague began to come from all these places. At the south end only a few dead rats were found and only four cases of plague occurred there, all close to where the rats were found, the rest of that district remaining free. At the remount camp two cases of plague occurred and these were removed and the camp was evacuated; only one further case occurred among the men turned out of this camp and this patient assisted in the excavation operations. The north end of the town and Strangers' Location and its vicinity still contained infected rats when I left and cases of plague were still coming from those parts.

To sum up shortly, in places where infected rats were found plague cases followed and in places where there were no infected rats only four cases of plague occurred, and in these cases the source of infection could not be traced at all. In no case was there direct evidence of man-to-man infection and in most cases the possibility of it was definitely excluded.

THE MODE OF COMMUNICATION FROM RATS TO MAN.

From the evidence obtained in various parts of the world the assumption that rats convey the plague to human beings is unavoidable. But it remains to be shown in what manner the disease is communicated from rats to man and why it is that so few human beings are attacked in proportion to the number of rats that die from the disease. While some persons appear to contract the disease from handling dead rats others are apparently able to handle them with impunity. In most cases, however, there is no evidence that persons who have contracted plague have come into actual contact with rats either dead or alive. In only one case in Port Elizabeth was the patient said to have handled a rat and the patient himself denied that he had done so. In their recent book on plague the Thomsons record the fact that children in India played with dead plague rats

without contracting the disease and other evidence goes to show that the handling of rats dead long enough to have grown cold is not attended with the same danger as handling rats that are still warm. It would appear, therefore, that although certain persons contract plague when they frequent or sleep in places containing infected rats only a small proportion of persons so exposed contract the disease and that it is apparently not necessary for such persons to have come into actual contact with diseased rats; and it appears also to be the case that there is more danger in handling rats recently dead than in handling those that have been dead for some hours. It seems evident, therefore, that the disease is communicated by some intermediary agent which can pass from rats to man without actual contact between the two and which is found in warm dead rats and not in cold ones. There is good reason for believing that this intermediary is the rat flea. It is well known that it leaves the bodies of rats as soon as they become cold and the plague microbe has been found in the bodies of rat fleas. It is stated that this flea will not bite human beings, but the evidence in support of this contention is slight and inconclusive. The fact that in one or two cases it has been found that the rat flea will not attack man is no proof that it never does so, and the evidence which seems to show that it is only occasionally that this particular flea attacks men—and then only certain individuals—accounts perfectly for what has been stated earlier, that in plague due to rat infection only a limited number of persons are attacked in proportion to the number of rats suffering from the disease. It is stated in a recent and authoritative book on the dog[1] that the dog flea never attaches itself permanently to man, although it may annoy him with occasional visits, and it is extremely probable that the same statement holds true with regard to the rat flea.

Although it is possible that most outbreaks of plague are initiated and carried on up to a certain point by means of rats it is not possible to avoid the conclusion that infection from person to person takes place sooner or later, but here again the presence of some intermediary seems to be apparent, and this agent is probably the human flea. It has been shown on many occasions that plague contracted through mere contact with plague patients, excepting in the case of those suffering from pneumonic plague, is of very rare occurrence, if, indeed, it ever occurs. It is also well known that when persons are removed from dirty, vermin-infected houses in which plague cases are constantly occurring cases of plague among such removed persons are rare, even though such persons are accompanied by others already suffering from the disease. "Contacts" removed from the most grossly infected areas and who wait on their plague-stricken relatives in well-kept hospitals—as they often do in India—rarely contract the disease. But if the human flea does become an agent in the spread of the disease it seems likely that it cannot become infected in a considerable number of cases, even when it feeds on plague patients. Observers are all agreed that the plague bacillus is rarely found in the blood of patients excepting immediately before death, and it is therefore improbable that fleas can become infected and be rendered capable of conveying the disease until this stage is reached. The preponderance of femoral and inguinal buboes appears to be a point in favour of the argument that fleas convey the disease. Anyone who has had much slum work to do in any of the English towns must have noticed that however careful one may be not to sit down and not to handle things unnecessarily it is impossible to prevent fleas from getting on to the legs; this is due to the fact that the floors in some of these dirty slum houses are simply swarming with fleas. In all cases where houses are infested with fleas it will be found, I think, that bites occur much more frequently on the legs than on other parts of the body. Now femoral buboes are the commonest in probably all epidemics of plague. Out of the 33 cases which I have detailed 24 had femoral and six inguinal buboes. It is, of course, asserted that this is due to the fact that the microbe gains access through small cuts or abrasions in the lower extremities, but although certain cases probably arise in this way careful search has failed to show that this mode of entrance is common.

THE DESTRUCTION OF RATS.

Before making some remarks on the destruction of rats it may be well to emphasise the fact that the finding of dead rats in a town, especially a seaport, which is exposed to the possibility of being infected with plague, is to be looked upon as a most suspicious circumstance. It is sometimes asked whether plague workers are not too apt to put down these cases to plague without sufficient evidence, and whether many of these deaths are not due to normal mortality, but it is significant that the men who work in rat-infected places are often the first to draw attention to the fact that dead rats are being found, showing that the finding of dead rats is not a common occurrence even in places where they are known to exist in large numbers, and inquiry among workers in stores and sheds has confirmed this impression. The fact is that rats dying from normal causes, and in most cases even from poison, die in their holes or in other inaccessible places. Plague is probably the only disease which causes rats to come out and to die in the open. It is well known now that not only do they do so, but that very frequently they do it in daylight and are seen to come out of their holes, stagger along for a short distance, and then fall dead. Bacteriological examination will, of course, always settle the question as to the cause of death, but deaths among rats are often not brought to notice until some time after they have occurred and the bodies have become too decomposed for examination.

From what is now known of the close connexion that exists between plague in rats and in man it is evident that in a country threatened with the introduction of plague it is a matter of vital importance in the first place to try to prevent infected rats from getting into the country, and secondly to do all that can be done to exterminate the rats already in the place, especially in the seaports. But a very short practical acquaintance with the subject shows that the task of preventing rats from gaining an entrance into any particular town and of exterminating those already in the town is one beset with difficulties. Every effort should be made to try to prevent infected rats from leaving a port in which there is plague. Before vessels leave such a port an attempt should be made to kill the rats on board by introducing sulphurous acid gas or carbon dioxide into the hold. There are, however, certain parts of vessels, especially passenger steamers, where it is scarcely practicable for gas to be introduced with any effect, and for this and other reasons any attempt made to kill the whole of the rats on board ship is not likely to be more than partially successful.

In seaport towns it seems almost an impossibility to prevent rats from getting on shore from ships. Even if protectors are placed on cables and chains rats can drop over the side and swim ashore. When vessels lie out in the harbour and discharge by means of lighters, as they do in Port Elizabeth, it is still possible for rats to get ashore. It will be found that in most lighters there are rats. It is a simple matter for them to get into lighters from ships and thus to get ashore or to infect the rats on the lighters, which in their turn make their way on shore by swimming or otherwise. But probably the commonest way in which rats are conveyed ashore is in cargo. In forage many are carried ashore, and it is stated by the manager of one of the largest milling companies in Port Elizabeth that it is not at all an uncommon occurrence to turn rats out of bags of grain when the bags are opened. In many other articles of cargo it is not only possible but it is quite certain that rats are conveyed ashore. This introduction of infected rats constitutes a far greater danger than that to be apprehended from the occasional introduction of a plague patient into a country. It becomes evident, therefore, that, while what can be done should be done to prevent rats from passing into a vessel calling at a place infected with plague, to kill as many as possible on board ship, and to prevent those left from passing ashore at a non-infected port from such a vessel, the measure on which the greatest reliance is to be placed in keeping a town free from plague is the extermination of the rats in that town, so that if plague is introduced into the place by means of rats the material necessary for its spread will be absent. Some remarks on the chief measures usually adopted for the destruction of rats may therefore be of interest. These measures are the use of traps, poison, dogs and cats, ferrets, poisonous gases, and the introduction of infectious diseases known to be fatal to rats.

Traps.—The use of traps is generally attended with disappointing results, partly because no particular care is usually taken in the use of traps and partly because in a very short time rats appear to get to know the object of the

[1] Ashmont: Kennel Secrets.

traps and to avoid them. Wire traps which will hold several rats at the same time are probably the best; they should be handled as little as possible and plunged into boiling water immediately after rats have been removed from them in order to keep them free from odour. The baits must be changed frequently; those most acceptable to rats appear to be toasted cheese, oatmeal, sunflower seeds, herrings, or bread, oatmeal, &c., on which a few drops of oil of aniseed or oil of rhodium have been sprinkled. One bait will often succeed in enticing rats into a trap when others have failed. Cabbage leaves on which oil of aniseed or oil of rhodium has been sprinkled are in great repute in some ports, but the use of these oils proved disappointing in Port Elizabeth. Probably the best results were obtained with sunflower seeds. The large quantity of food within the reach of rats in all towns is responsible to a great extent for the failure which generally attends the use of traps.

Poison.—This, in my opinion, is the measure on which most reliance should be placed for the destruction of rats. Its disadvantages are obvious: most rat poisons will kill other animals, including children, and many persons object to their use on this account. But if care is used the danger can be reduced to a minimum. By laying the poison late at night, taking it up early in the morning, and shutting up domestic pets during the time that it is laid, there is practically no risk of anything but rats suffering from its employment. Another disadvantage is that rats killed by poison often die under the floors of rooms and the stench arising from their decomposition becomes unbearable. There appears to be no way of avoiding this. Some makers of rat poisons advertise that their poison causes the dead bodies of rats to dry up without emitting any offensive odour, but a poison which really does this has not yet come under my notice. The only reply that can be made to the objection that poisoned rats cause such an objectionable odour is that the odour from dead rats about a place is much less dangerous than the presence of live rats in it when plague is present in the town or likely to be introduced. Most of the advertised rat poisons fulfil the purpose for which they are sold fairly well and some of them give excellent results. A home-made preparation which is highly spoken of is one made by mixing equal parts of plaster-of-Paris and oatmeal together. The addition of a drop or two of oil of aniseed probably makes the mixture more attractive. Very good results are obtained sometimes by dissolving arsenic in water, but great care must be exercised in its use as the water is very apt to be drunk by those for whom it is not intended. In certain parts of Port Elizabeth where poison was used systematically the reduction in the number of rats was most marked and in some places they appear to have been exterminated. Under this heading may be mentioned some substances which while not being destructive to rats are yet so objectionable to them as often to cause them to leave the place where they are used; the chief of these are lime, chloride of lime, and carbolic acid. As, however, the driving of infected rats from one place to another is more likely to spread plague than to assist in stopping its spread, the use of these substances in places where there are known to be infected rats would not be advisable were it not for the fact that the three substances mentioned are destructive to fleas; hence the scrubbing of floors with carbolic acid is a measure to be recommended, and as fleas lay and hatch their eggs in sand the laying of lime on the ground around buildings is also a wise precaution. The lime should be frequently renewed as it soon loses its strength.

Dogs and cats.—No very marked benefits arise from the use of these animals when the wholesale destruction of rats is attempted, but they are useful as auxiliaries.

Ferrets.—These animals are employed largely in some places and in the hands of expert rat-catchers good results are obtained, but their use in places where rats are infected with plague is not to be recommended. 20 ferrets were received in Port Elizabeth from England on July 9th. They were worked systematically from about the 20th. On the 30th it was noticed that some of the ferrets were sick. On August 1st two died, and by the 14th 16 out of the 20 had died and the remaining four, then very ill, were killed. Five of the ferrets that died were examined. A few organisms resembling plague bacilli were found in the organs of the first, in the second nothing was found, and in the other three plague bacilli were abundant and the post-mortem appearances were characteristic. As all the ferrets had precisely the same symptoms it is more than likely that all of these contracted plague. The use of ferrets, therefore, in an infected place is not unattended with danger as they may introduce disease among rats not already infected.

Poisonous gases.—The two gases chiefly employed are sulphurous acid gas and carbon dioxide. They may be used in the holds of ships, in stores where the buildings are suitable, and in sections of sewers. In all cases the place into which the gas is introduced should be hermetically closed and the gas should, if possible, be introduced under pressure in order to insure its penetrating into the desired parts. It is scarcely necessary to mention the precautions which must be used in entering places which have been filled with a poisonous gas. In certain cases good results have been recorded from the use of gas, especially in ships' holds and in sewers.

The introduction of infectious diseases among rats.—The disease on which some hopes have been built is that caused by Danysz's bacillus. That it will cause the death of all the rats amongst which it is introduced is more than doubtful. In order that the disease may spread among rats it is necessary apparently that those that have died or are likely to die from the disease should be eaten by their fellows, and the virulence of the organism rapidly diminishes in these circumstances. Rats shut up together in a cage will eat each other and they possibly do so to a very limited extent under normal conditions, but if this proclivity is alone relied upon to spread the disease I think that this mode of extermination of rats is destined to result in failure. Culture of bacillus can, however, be used in the same way as rat poison by soaking pieces of bread in a broth emulsion of a fresh culture and spreading them in places where rats are known to congregate. The advantage over poisons is that the bacillus is not poisonous to animals other than rats and mice, but on the other hand, the results are not so rapid as in the case of poisons and not apparently so certain. Professor Simpson introduced the bacillus into Port Elizabeth and at his request I fed three rats on cultures and distributed a considerable quantity of bread prepared in the way which I have mentioned in different parts of the town. Of the three rats fed on the virus only one had died at the end of a fortnight and no characteristic bacilli were found in its body. The bread saturated with the cultures was well taken, but no results were apparent up to the time of my leaving Port Elizabeth. Professor Simpson thought that the negative results obtained in this case might be due to the cultures being rather old when used, although Kister and Kottgen consider that the cultures retain their virulence for some weeks.[2] Fresh cultures were being used when I left and the results will no doubt be made known later.

In concluding this article I desire to express my indebtedness to Dr. Kirton, district plague medical officer, Port Elizabeth, who performed the post-mortem examinations on the bodies of the ferrets and on many of the rats that died in the town and who kindly placed his notes at my disposal; also to Dr. Edington, Government bacteriologist, and to Dr. Kidd and Dr. Cooper, plague medical officers, Port Elizabeth, for making several post-mortem examinations of rats and furnishing me with particulars of the same.

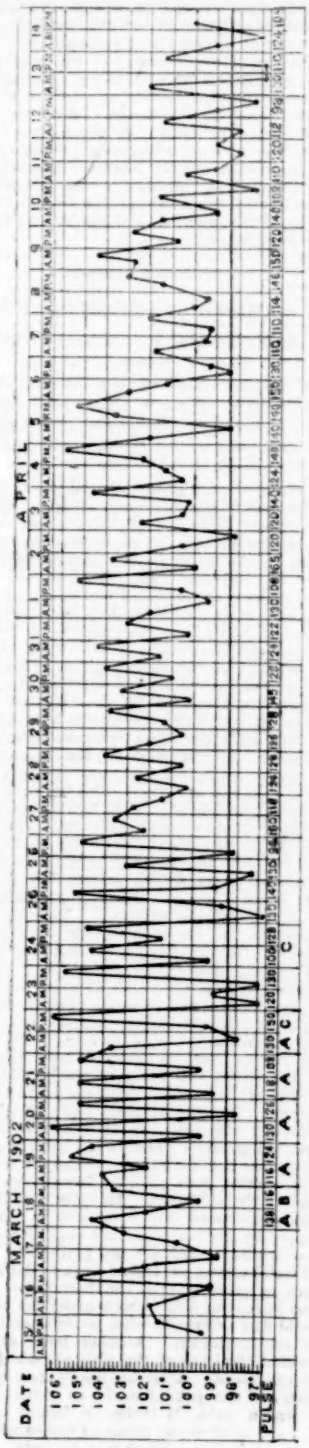
High Barnet.

A CASE OF PUERPERAL SEPTICÆMIA.

BY A. F. DIMMOCK, M.D. DURH., M.R.C.S. ENG.

THE following case of puerperal septicæmia may be of interest on account of the remarkable variations in the temperature. The patient was a married woman, 20 years of age, and was seen by me on March 10th, 1902, when she was in the fifth month of pregnancy and threatened with a miscarriage. She was very anæmic and had been so for some considerable time. She was delivered of a still-born child which had probably been dead a week. The placenta was macerated and brownish in colour, but no bad odour could be detected. On the following day the patient was not so well and on the next day the temperature rose to 100° F. I then gave an intra-uterine douche and ordered a vaginal douche each night. Finding no improvement and the temperature gradually creeping up I sought the assistance

[2] Deutsche Medicinische Wochenschrift, May, 1901.



A, Intra-uterine douche. B, Operation. C, Injection of anti-streptococcic serum.

of Dr. W. Fearnley and on March 18th, under ether, the uterus was well curetted and a hot salt intra-uterine douche was given with full doses of ergot. The temperature still remaining high five grains of sulphate of quinine were ordered every four hours during the day. On the 22nd I injected 10 cubic centimetres of anti-streptococcic serum, the hot salt intra-uterine douches being continued. On the 24th another injection of 15 cubic centimetres of anti-streptococcic serum was given without any apparent benefit. The intra-uterine douches were now discontinued; the temperature in spite of everything still continued high, rising to 106° on April 4th. After this, with many fluctuations, the temperature gradually came down and on the 14th the patient began to convalesce and is now better in health than she has been for years.

Cough was a troublesome symptom and on March 27th the patient complained of an occasional pain under the left breast, but there were no physical signs to account for it. Diarrhœa was absent during the early part of the illness, but came on on April 4th and continued till the 9th, during which time she was taking lime-water and boiled milk, with brandy and a bismuth mixture.

Harrogate.

A CASE ILLUSTRATING THE LOCAL AND PULMONARY EFFECTS OF ABDOMINAL PRESSURE.

BY ROBERT KNOX, M.D. EDIN., M.R.C.S. ENG., L.R.C.P. LOND.,

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THE treatment of abdominal effusions is a matter which constantly perplexes the practitioner and offers many points worthy of consideration. Frequently such cases are the subject of operative measures, either of tapping or of the more elaborate laparotomy when the lesion is tuberculous. In dealing with such cases it is a point of great importance if one can resort to a simpler method of treatment which will have a beneficial result. In the case quoted below my attention was drawn to the method of treating peritoneal effusions by the application of firm abdominal strapping. The result justified a thorough trial of the method and although it is impossible to lay down a principle in treatment on the result of an isolated case, yet I am constrained to publish its clinical history, along with remarks on the treatment, in the hope that others may be induced to try the method before proceeding to more drastic and certainly not more efficacious measures. My thanks are due to Dr. Alexander Morison who saw the case in consultation with me and advised the trial of the abdominal strapping for the case in question.

The patient was a female, aged 21 years, who consulted me in October, 1901, regarding symptoms of shortness of breath, palpitation, pallor, and a feeling of weight in the left side. With regard to her family history, her mother was alive and well and her father died young—it was said from "decline." The patient was very anæmic and emaciated. The physical signs consisted of bulging of the left lower thoracic wall, immobility on respiration, marked dulness of the base of the lung up to the level of the sixth dorsal vertebra, absolute dulness over the lower ribs which gradually faded upwards, and loss of vocal fremitus over the area of dulness. The breath sounds were inaudible over the lower portion of the dulness and were faintly heard over the upper portion. The heart dulness was displaced upwards and to the right and visible pulsation in the third interspace to the left of the sternum was observed. The abdomen was slightly distended and tympanitic, with dulness on light percussion in the left lumbar and hypochondriac regions, and tenderness was complained of when pressure was applied. The kidneys were normal. Friction sounds were heard at the right apex anteriorly. Pleural effusion was diagnosed. The patient was ordered rest and put on iodide of potassium and tonics internally with counter irritation over the left base. The progress of the patient was slow and tedious, but eventually she recovered sufficiently to go to the country where she stayed for six weeks. On her return the following condition was noted. There was some dulness on percussion at the base of the left lung posteriorly with diminished vocal

resonance but normal lung sounds on respiration. There was, however, no evidence of actual lung disease anywhere. The heart's action was normal. The abdomen was evidently distended and on sitting gave percussion and dulness nearly up to the umbilicus. When lying the anterior dulness sank to just above the suprapubic region in the middle line and was perceptible in the lumbar region. There was thrill on palpatory percussion. There was evidently a considerable quantity of free fluid in the peritoneal cavity.

Dr. Morison saw the patient in consultation and advised that she should have complete rest. For the abdominal condition he recommended abdominal strapping in the first instance, to be followed by tapping and re-strapping if the fluid increased to any extent. Adhesive plaster in strips two inches broad was applied to the abdomen, several layers being used, until a fairly rigid casing of the abdomen was obtained. The pressure was moderate at first. The strapping was applied all over the abdomen, extending up to, but not involving, the lower ribs, so as not to interfere with respiration. Tonics were given and fresh air with nourishing food was ordered. The strapping was removed in three days and the fluid was found to have diminished in quantity, when the abdomen was re-strapped, more pressure being applied on this occasion. The treatment was continued for about three weeks, each application of strapping being allowed to remain for three or four days. The fluid gradually disappeared and on removing the last strapping the abdomen presented a normal appearance. Tenderness was felt on pressing over the former seat of pain, but no definite evidence of any lesion could be discovered. The patient improved in health and gained weight, the lung gradually cleared up, and fremitus could be felt over the former area of dulness, though at the extreme base dulness persisted, due no doubt to a thickened pleura. She was ordered to live in the country and as much as possible in the open air; iron and arsenic were continued in order to combat the anæmia which still persisted. She reported herself on July 11th, 1902, when it was found that she had gained weight and had a good colour. On examination slight dulness was detected over the extreme left base and breath sounds were audible over the former area of dulness. The abdomen was now of normal appearance, no fluid being perceptible. There was slight tenderness on pressure over the former seat of pain and dulness. The patient now menstruated regularly and had done so for the previous four months.

The case was regarded as being of tuberculous origin, the diagnosis being based on the following facts: 1. There was extensive pleurisy of the left side, with a large effusion in the pleural cavity, and an isolated patch of pleurisy on the right side anteriorly. 2. There were emaciation and marked anæmia. 3. Coexistent with a peritoneal lesion there were tenderness and dulness on the left side with, later, an obstinately sluggish effusion into the peritoneal cavity. Unfortunately it was impossible to demonstrate the bacillus, there being no expectoration at any period of the prolonged illness. The case resisted the ordinary methods of treatment for a considerable time, the effusion steadily increased in quantity, and the case began to look decidedly discouraging. It was only after the abdomen had been strapped that the patient began to show any sign of improvement and then she improved rapidly. Assuming that the diagnosis of tuberculous pleurisy with an accompanying tuberculous peritonitis was correct the points of interest are chiefly as follows: 1. The great value of firm abdominal strapping as a means of promoting the absorption of an excessive quantity of free fluid in the peritoneal cavity. 2. The rapid absorption of the fluid which had resisted for months the ordinary medicinal treatment. The improvement was noticed after the first application of strapping and gradually increased with each fresh application, till in three weeks the peritoneal cavity was cleared of all fluid. 3. The resulting improvement which took place in the lung condition, the resonance of the lung improving and respiratory sounds in the affected area becoming more evident. The absorption of the fluid in the peritoneal cavity was aided by the firm pressure forcing the fluid upwards towards the diaphragm which is liberally supplied with lymphatic structures. The strapping helped to restore the power of the lymphatics and to give the necessary support to enable them to deal with an abnormal accumulation of fluid; in other words, the abdominal muscles required extra support to enable them to keep up sufficient pressure upon the abdominal viscera to restore the temporary loss of functional power caused by the fluid in the cavity. Further, the pressure upon the diaphragm was beneficial in restoring the respiratory function of the lung damaged by the fluid pressure in the pleural cavity. Abdominal respiration was hindered by the binding up of the abdominal walls and respiratory action was directly stimulated as a consequence of such hindrance. A physiological analogy is furnished in the case of advancing pregnancy: the pulmonary capacity of a woman increases under the encroachment of the enlarging uterus; so the limitation of the abdominal cavity by strapping appears to cause the thoracic movements to be exaggerated and the respiratory powers of the lungs to be increased.

Highgate, N.

A CASE OF ANENCEPHALUS.

BY W. H. MAIDLOW, M.D. DURH., F.R.C.S. ENG.

CASES of this fœtal malformation are of sufficient rarity and clinical interest to merit notice, and reflecting upon the fascinating subject of ante-natal pathology, on which Ballantyne has so well written, I venture to publish my notes of the following case.

A well-developed primipara, aged 25 years, had married, on April 25th, 1901, her maternal cousin. There was no personal or family history of syphilis, alcoholism, tubercle, or of any deformity, and the stock was free from obvious "degeneracy." The patient's last menstruation ceased on April 25th. On May 14th she "caught a chill" and about the middle of June an irate old woman asked her how her "lunatic child" was. Early in July movements were felt. For a week, on and off, in the middle of November she had some epileptoid attacks which were strongly suggestive of eclampsia, but there was no albuminuria. At this time the fundus of the uterus was one and a half inches below a line drawn across the abdomen at the level of the eleventh ribs and the movements were quite vigorous. On March 18th, 1902, the patient was awakened at 2 A.M. by the noisy rupture of the membranes, the liquor amnii deluging the bed. At 5 A.M. the abdomen was very large, head, and back to left and anterior. Per vaginam the os uteri appeared normal, its diameter being two inches and with soft margin likely to dilate without difficulty. The presentation was difficult to be sure about, for on the one hand there was bone which felt like the occipital protuberance and on the other there were three softish masses which would have answered to either a face or a breech presentation. Diagnosis was made of "something unusual." Deciding to expedite labour I applied a firm binder, withdrew half a pint of urine, washed out the rectum, fed the patient and prescribed a mixture of quinine and belladonna as an oxytocic and an anti-spasmodic respectively. At 10 A.M., however, I had to change my tactics and ordered chloral and nepenthe, as absolutely no progress had been made and no sufficient pains were resulting. At 3.30 P.M., after five hours' good sleep, the os uteri had fully dilated, the pains were good, and the fœtus was lying obliquely with its anterior ear well within reach, and affording no doubt that the vault was malformed. In spite of good pains the head did not descend through the brim, so at 4.30 P.M. it was drawn (the patient being under chloroform), after a quarter of an hour's pulling, to the perineum, whence, also refusing to move, after another half an hour forceps were re-applied and it was easily extracted. In spite of all endeavours further expulsion seemed impossible and it remained there, tightly gripped by the perineum and encircled by the funis, for an hour whilst I sent for my partner to help me. I thought of fœtal ascites or locked twins (the abdomen still being large), or possibly of a too short funis. After much difficulty my finger was able to hook under the posterior axilla and the child was delivered, with, unfortunately, a complete rupture of the perineum. Another large gush of liquor amnii preceded the birth of the placenta which was normal and easily expressed. After an hour's rest the perineum was restored and the patient made an uneventful recovery. The child was a male, 24 inches in length and weighing 11 pounds; the bisacromial diameter measured eight inches and the cord 22 inches. There was no neck. The base of the skull ended anteriorly at the orbital margins and

posteriorly at the occipital protuberance. The vault consisted of membrane, in the anterior third of which were two lateral lobes and one anterior lobe united at the bases, each as big as a blackbird's egg and suggestive of an encephalocele. There was no obvious cerebrum but the cerebellum and the parts below seemed normal. The feet showed fixed talipes equino-varus.

Had I remembered the usual associated conditions of anencephalus—viz., an absent or a short neck and long bisacromial diameter—I should not have marvelled at the delay after the birth of the head. Even if the period in May was missed pathologically, unless the large size of the child be looked at as vicarious to the non-developed head, pregnancy was evidently protracted. The convulsions in November, the hydramnios, the talipes, the so-called maternal impression, and the consanguineous marriage are other interesting features of the case. In spite of the long detention the child lived for 15 minutes after birth and then died after some slight convulsions. I might have obtained more room had I amputated the head, but the absence of a neck and the proximity of the head to the vulva made this impracticable without risking a worse injury than a ruptured perineum. This might also have been avoided had I done cleidotomy. The course pursued appeared on the whole to present fewest risks to the mother. There was no maternal pelvic deformity.

Ilminster.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

UNILATERAL PRESSURE ON THE THORAX AS AN AID IN DIAGNOSIS.

BY G. MORENO DE LA TORRE, M.D.

PNEUMONIA can usually be diagnosed with tolerable certainty, but it occasionally happens that the physical signs are obscure or difficult to elicit, as, for instance, in cases of chronic pulmonary disease with emphysema, adhesions, &c., or in very corpulent patients, or in females with abnormally large breasts, or when the pneumonia is central. The general symptoms are also sometimes misleading in the very young, in the very old, and in the intemperate. In all such cases, if pain be present, however slight or vague or abnormally situated, it may, I think, be made available as an aid to diagnosis in the following manner. If both hands are applied over one side of the chest in front and pressure sufficient to arrest all movement in the subjacent lung be slowly exerted, when the inflammation causing the pain is in that lung the pain will either disappear or, in the event of it persisting, the patient will at least breathe without discomfort. If there be inflammation in the other lung also the pain will generally continue, though its character and seat may change. If the inflammation is in an abdominal organ or the tissues surrounding it the pain will continue and will perhaps increase. I have not yet had an opportunity of testing this sign in pericarditis. By making pressure first on one side of the thorax and then on the other it may be possible to draw conclusions as to whether the part affected is in the thorax or the abdomen, and in the former case on which side of the thorax it is. If pain referred to the abdomen disappears when pressure is made on the thorax the inference is that the primary cause of it is some pulmonary disorder.

Cerrada del Paseo, Habana, Cuba.

EXPLOSIVE ERUCTATIONS.

BY ANTONY A. MARTIN, M.D., B.S. LOND.

AN elderly man under my care has been suffering for some weeks from severe atonic dyspepsia. A marked feature of his case is fermentative decomposition of the contents of the dilated stomach with frequent eructations of foul gas which he says "tastes like rotten eggs." On Sept. 19th, two hours after a light breakfast, he was obliged to eructate just as he was lighting his pipe with a match; instantly there were a blinding flash and a slight report due to ignition of the gases released from the stomach. The patient's beard and eyebrows were thoroughly singed but happily no further damage was done.

It would be interesting to hear of similar cases and whether this dangerous complication of dyspepsia is at all common.

Eastbourne.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

CARDIFF INFIRMARY.

A CASE OF RESECTION OF THE STERNUM FOR A SARCOMATOUS GROWTH.

(Under the care of Dr. P. RHYS GRIFFITHS.)

THE number of recorded cases in which resection of the sternum for a malignant growth has been performed is by no means large. In some cases the bone has been resected because it has been involved in a malignant growth extending from neighbouring parts, but the operation is generally performed for a primary sarcoma of the bone. It is always extremely difficult and often impossible to determine when the anterior mediastinum is involved, so that the prognosis must always be grave; but sufficient instances have been published to show that in suitable cases resection of the sternum for malignant disease is a very satisfactory operation. In the following case the disease was extensive and at the necropsy other parts of the body were found to be involved, but the patient lived for four months after the operation even though it was not found possible to remove the whole of the local disease.

A man, aged 25 years, a collier, was admitted into the Imsoll Ward of the Cardiff Infirmary under the care of Dr. P. R. Griffiths on March 29th, 1900, for a swelling over the sternum. Dr. Eldon Pratt stated that the man was quite well and fat and able to work until seven months before admission. He was then attacked with vomiting some three times daily. The vomiting lasted for a week. It was then for the first time that he noticed a swelling over the breast-bone. Ever since he had been getting thinner and weaker. At Christmas, 1899, he had an attack of influenza and was laid up for six weeks. Since then he had been unable to follow his occupation. The lump at this time (Christmas) was of about the size of a walnut. Seven weeks before admission he had a severe cough for a week and he stated that from this time the lump had been increasing rapidly in size. It had caused him practically no pain, except occasionally, when it was like a knife running into him. He had had no fainting or dyspnœa. His appetite had been good. He had always been a healthy man. He had had no illness except influenza. He had not had syphilis or gonorrhœa. There was no history of a blow. On admission he was a very sallow-complexioned man, dark, tall, and thin. He had evidently wasted a good deal. He seemed to move somewhat feebly and he looked as though he might be the subject of malignant disease. He did not complain of pain but he stated that he had an attack of pain in his chest the day before admission. On examination of the chest there was found a symmetrical swelling centrally placed over the sternum. The swelling was prominent in its centre and it shaded off all round, but the edge could be fairly well felt. It extended from the second to the seventh costal cartilages. It was hard and tense, but in one or two places it gave the impression of fluctuation. It was firmly fixed to the sternum and could not be moved. The costal cartilages as well as the sternum were somewhat raised above the general level of the chest. The skin over the tumour was quite healthy and of normal

colour. No pain was felt on deep pressure. The note on percussion was dull and there were no auscultatory signs. There was no pulsation in the tumour. The heart and lungs were healthy, as were also the abdominal organs. The urine was normal and had a specific gravity of 1010 and acid reaction.

On April 7th, assisted by Dr. Pratt, Dr. Griffiths decided to resect, if possible, the sternum. Chloroform was administered, whilst oxygen was kept in readiness for emergencies. A large oval flap was turned up and dissected off the tumour. When fully exposed the tumour was incised and found to be to all appearance a malignant growth. There was no fluid in it. The limits of the tumour were then fully defined as seen from the front. On the right side the perichondrium was carefully stripped off the cartilages of the second, third, fourth, and fifth ribs, and these were cut through. A sufficient piece of cartilage was removed to allow room for getting behind the sternum. The intercostal muscles were then cut through and the pleura was exposed. After freeing the right side the left side was treated in exactly the same way. The sternum was then cut across at its upper end. An attempt was first made with a saw but it was found that a bone-forceps was much more serviceable. At this stage on inserting the fingers under the sternum the growth was found to be more extensive on the under surface, involving the anterior mediastinum. When freeing the left upper corner of the sternum the left internal mammary artery was cut across, blood escaping in large volume with a loud hissing noise. The bleeding was alarming and in order to get at the bleeding point the upper part of the sternum was detached with great rapidity; in doing this the left pleural cavity was opened and the lung was exposed, presenting in the wound. A plug of sterilised gauze was inserted into the pleural cavity and the artery was seized with a Kocher's forceps. It was found impossible to tie the vessel and the forceps was left on it. After clearing the pleural cavity the rent in the pleura was sewn up except a small hole which it was not possible to close owing to the rigidity of the parts in that situation. The greater part of the growth in the anterior mediastinum was removed, but it was not possible to get the whole away, some of it having extended upwards along the vessels under the clavicle. The right pleura remained intact. The pericardial sac was fully exposed and the beatings of the heart were observed to be violent and rapid. Air gushed in and out of the left pleural cavity. The patient's pulse all this time was good and he was kept just under the influence of the anæsthetic. The skin-flap was then sewn up after a large iodoform gauze plug had been inserted into the cavity left after the removal of the sternum. It was noted that there was some slight tension in the flap, evidently the result of the enlargement of the left chest. The operation lasted for two and a half hours. The patient's condition on removal to bed was fairly good.

The patient soon recovered consciousness. At 1 P.M. he seemed to be rather bad. Hypodermic injections, consisting of five minims of solution of strychnine, were ordered every four hours. At 6 P.M. he was easier; $\frac{1}{150}$th of a grain of digitalin was ordered to be given every three hours. At 11 P.M. a hypodermic injection of one-fifth of a grain of morphia was given. On April 8th he had slept the previous night for two hours. He looked fairly well. On the 9th the wound was dressed at 3 30 P.M., the plug being removed. The forceps was taken off the internal mammary artery. Some pus escaped with the plug, also a little air from the left pleural cavity. The wound was replugged with iodoform gauze. The strychnine and digitalin were stopped, the patient having had them for 48 hours. On the 13th the wound was dressed twice a day. A considerable quantity of yellowish-green pus escaped. There was a tendency to sloughing of the lower margin of the skin flap. The temperature was high in the afternoon but the patient seemed to be easy and lay quietly. Light food, such as eggs, milk, and brandy, was being taken well. On the 17th the stitches were removed. The flap was slightly retracted. Boric fomentations were ordered. There was still much pus. On the 27th the wound was granulating up well. He was on full diet and his appetite was excellent. A small semi-fluctuating lump was observed on May 18th springing from the anterior end of the tenth rib; it was not painful and was probably a secondary growth. On May 22nd the patient's condition had been declining. His appetite had failed and he was looking paler, thinner, and more feeble. The condition of the wound was very satisfactory. On July 25th he complained of pain in his chest. The right hand and arm had become swollen and painful. Some sign of recurrence of growth was present in the upper and lower angles of the wound. The growth on the rib was as before. From this time he gradually got weaker and he died on August 2nd from exhaustion, four months after the operation.

The growth removed at the operation was examined and found to be a round-celled sarcoma.

Necropsy.—A post-mortem examination was made on August 3rd by Dr. W. Mitchell Stevens, pathologist to the infirmary. A large moderately firm grey mass involved the posterior surface of the portion of the sternum left after operation and also the attached rib-cartilages for a distance of two or three inches. The ribs chiefly involved were the third, fourth, and fifth. The clavicles were free. The growth entered into the anterior mediastinum, involving the connective tissue and glands there. The bronchial and lower cervical glands on both sides were involved. The pericardium and heart were free from growths. The pleura on both sides, especially the right, showed numerous nodules in the parietal layer situated both on and between the ribs. The lungs were not affected. No pleural effusion was present. The growth on section was moderately hard, greyish in colour, and presented no spots of hæmorrhage or degeneration. There was no ascites in the abdomen. No nodules were seen in the pericardium, but there were a few scattered ones grey in colour in the upper surface of the liver and these were of about the size of a pin's head. The stomach and intestines were normal. The spleen was slightly enlarged and firmer than natural and one section showed a large number of small grey nodules similar to those in the peritoneum and upper surface of the liver. Excepting the nodules above mentioned nothing was found in the liver itself, but there were a large number of enlarged glands in the portal fissure adherent to the under surface of the liver. In front of the spine and below the level of the pancreas was a large mass of hard, grey, nodular growth of the size of the closed fist. This was adherent to the aorta and spinal column and seemed to arise from the glands. The mesenteric glands were not enlarged. The diaphragm showed on its under surface, about the centre of the arch on the right side, a growth of about the size of a walnut adherent to the upper surface of the liver. No growth was found in any other part of the body. Microscopically the growth presented the characters of a lympho-sarcoma.

Remarks by Dr. GRIFFITHS.—The operation of resection of the sternum is not one of frequent occurrence, and as the above case presents some interesting features I have thought it worthy of record. The subject has been fully treated in Mr Stephen Paget's very interesting work on the "Surgery of the Chest." My opinion when I first saw the case was that I had to deal with a primary growth of the sternum of a sarcomatous nature. It was for this reason that I determined to attempt the removal of the growth and the sternum. In the light of the subsequent operation and post-mortem examination I am inclined to doubt the accuracy of my diagnosis. In the previous history of the case there was nothing to suggest a mediastinal growth, neither was there evidence after careful physical examination of the chest that there was any marked involvement of the mediastinum. In spite of this I was prepared, after previous experience with growths from the ribs which I have removed and after perusal of the literature of sternal growths, to find that what appeared to be a well-defined and limited growth externally had wide and deep extensions. This proved to be the case in my patient and it was found that the structures in the anterior mediastinum, and especially beneath the left clavicle, were so far involved that complete removal of the growth was impossible. The opening of the left pleural cavity was a pure accident and might have been easily avoided but for the necessary rapid manipulation to secure the arrest of bleeding from the internal mammary artery. The degree of shock was comparatively slight. I am indebted to Dr. Pratt for the notes of the case.

ABERGAVENNY COTTAGE HOSPITAL.—A new building which is called the Victoria Cottage Hospital and Dispensary was opened by Lord Tredegar at Abergavenny on Oct. 6th. The institution is to replace the old cottage hospital and will also be the home of the Abergavenny Dispensary which was established nearly 75 years ago. There is accommodation for nine patients of each sex. The cost of the building was £1925 and the land upon which it is built was given by the Abergavenny corporation.

Reviews and Notices of Books.

Les Filatures de Lin: Étude d'Hygiène Professionnelle. (*Flax Spinning Mills: Study of Industrial Hygiene.*) Report of Inquiry presented to the Belgian Minister of Industry by Dr D. GLIBERT, Medical Inspector attached to the Central Administration. Brussels: J. Lebegue et Cie. 1902. Pp. 463. Price 9 francs.

IN this country there are few branches of public health which have of late made greater strides than the study of industrial hygiene. The foundation of this branch was largely due to the Milroy Lectures which were delivered in 1889 by the late Dr. J. T. Arlidge, and since then the subject has been steadily pursued by the Home Office. Other countries, even the smaller, have not been idle, as is well illustrated by the exhaustive work on the health aspect of flax spinning which has recently been presented to the Belgian Minister of Industry. The unhealthiness of the flax industry has occupied public attention in Belgium for several years, but in 1895 an agitation began which led to the appointment of Dr. Glibert, the medical inspector attached to the Central Administration, with whom were associated Dr. Buyse, Dr. Decamps, Dr. Deffernez, and Dr. Thisquen, to make a thorough investigation into the whole subject. They have faithfully carried out their instructions.

The introduction to the volume contains an excellent account of the treatment to which the flax is subjected both before and after its arrival at the mills and the very concise description given is rendered easier of comprehension by the several reproductions of photographs and plates which accompany it. The flax industry is carried on in many localities in Belgium, but the chief centre is in Ghent. During the inquiry, which lasted for from four to five years, 12,274 persons were examined as regards health by the inspectors, and their environment outside the mills was, we are glad to see, not lost sight of in the conclusions arrived at. Each branch of industry was separately studied and, as was to be expected, the results showed that some branches were much more prejudicial to health than others. As regards the influences of the industry on the two sexes it would appear that women suffered to a greater extent than men, but this is to some degree, although by no means wholly, to be explained by the fact that nearly half the total number of women employed in the industry were working in the most unhealthy branch of all, that of wet spinning. By means of a table the authors have arranged the persons engaged in the several branches of the industry into those in good, mediocre, and bad health, definite and scientific data having been employed in the classification. The point which comes out prominently in this grouping is that under 57 per cent. of the females engaged in spinning are in good health, as against nearly 74 per cent. of those occupied in carding. In summing up their conclusions the inspectors have had regard to such questions as those of age, sex, and length of employment. By way of a sort of control study the rag-picking industry has been investigated. Although the total number of persons examined in this instance was but 1974 there are many parallel conditions which render the comparison a fair one, and a study of the two industries leaves an enormous balance in favour of the rag pickers. The influence of the flax mills upon infantile mortality is very striking, the premature and still births, as also the early diseases of the infants, being much higher among the flax workers than among the outside population. The infantile mortality, too, bears a direct relation to the precise nature of the mothers' employment. Generally the disastrous results of the industry are ascribed by the authors (1) to the depressing action of a high temperature associated with an atmosphere almost saturated with moisture, and (2) to the excessive liberation of dust. Moreover, there are certain cutaneous eruptions and ulcerations which seem to be an almost necessary accompaniment of some operations.

Towards the end of this eminently interesting and instructive volume the authors give the several methods of ameliorating the conditions which are adopted in various parts of Belgium and abroad, and it is gratifying to learn that as regards hand combing the inspectors found in England a satisfactory method of ventilation. Finally, the recommendations which are made embrace the following: (1) that the minimum age should be increased, regard, however, to be given to the medical certificate as to the fitness of the applicant; (2) that there should be as little as possible night and seventh day work and that such work should be compensated by additional leave; (3) that pregnant women should cease work 15 days before their expected confinements and *crèches* should be established for the care of the infants during the hours of labour; and (4) that in carding the age-limit should be very closely watched and in wet spinning the age of admission should be raised, the daily duration of labour diminished, and splashboards always used. The inspectors accentuate the importance of cleanliness and they add that if all the improvements observed in different mills could be concentrated into one an almost ideal condition would be reached. As regards rag picking it is recommended among other things that old rags should be first sterilised and that the rag-pickers' tables should be ventilated. The work as a whole is most complete and does the authors the greatest credit.

Elementary Text-book of Zoology. By A. T. MASTERMAN, M.A., D.Sc. Second edition. With 398 Figures in the text and 13 Plates. Edinburgh: E. and S. Livingstone. 1902. Pp. 628. Price 12*s.* net.

THE two most marked features of this text-book are the abundance and the novelty of the illustrations, which for the greater part have been drawn for the especial purpose of the work. This lends to the volume a particular interest which is lacking in works of a similar scope where only old, and frequently quite hackneyed, figures are made use of. The clearness of a number of these original drawings is admirable and the line between a purely diagrammatic representation and a too detailed portraiture of actual fact with unnecessary accessories is usually deftly drawn. The text, moreover, is correspondingly clear and thoroughly intelligible and the author has evaded the temptation to dwell too long upon matters in which he himself is more particularly interested, a temptation which we know from personal experience is hard to confront with success. Quite recently there has been a tendency in text-books of zoology, in which the type system must at least to some extent be employed, to break loose from the traditional types. Dr. Masterman has joined this band of innovators and has with praiseworthy daring replaced the crayfish by the Norway lobster, a creature suitable to the students of some of the northern universities on account of its abundance on the coasts of Scotland—the east coast, at any rate. The author does not content himself merely with a description of his selected types and with a general sketch of the characters of the various classes and orders of animals. The first 84 pages deal with the generalities of the subject and the student is introduced to the principles of evolution, to the distribution of organisms, to the influence of habitat, and such-like matters. The ensuing chapters, which constitute the bulk of the book, are concerned with the careful description of a series of types—and quite a liberal series, too, as text-books go—and a

briefer exposition of the characters of the various groups of the animal kingdom In fact, the commencing student of zoology will find all that he needs to know in order to be in a position to grapple with the examination papers in elementary zoology set in Scottish universities; nor will the knowledge thus acquired prove, so far as we have tested the volume, in any way inaccurate.

International Catalogue of Scientific Literature. First annual issue. Vol. I., Part I., Botany. Vol. II., Part I., Chemistry. Published for the International Council by the Royal Society of London. London: Harrison and Sons. Vol. I., Part I.: 1902 (May); pp. xiv.–378; price 21*s*. Vol. II., Part I.: 1902 (June); pp. xiv.–468; price 21*s*.

THE appearance of the first instalments of this extremely important work may be said to inaugurate a new epoch in scientific bibliography. The International Catalogue of Scientific Literature, commencing with the literature of the year 1901, is an outgrowth of the "Catalogue of Scientific Papers" relating to the scientific literature of the nineteenth century, published by the Royal Society of London. The suggestion to catalogue scientific papers may be traced back to Professor Henry of Washington, U.S.A., who brought the subject under the notice of the British Association for the Advancement of Science at its meeting in Glasgow in 1855. Twelve large quarto volumes have now been printed in which the titles of papers published during the period 1800–83 are arranged under authors' names, and a catalogue of the scientific papers published during the period 1884–1900 is in course of preparation by the Royal Society. The possibility of preparing a complete index of current scientific literature by international coöperation was first taken into consideration by the Royal Society about the year 1893, the result being the bringing together of an international conference of delegates appointed by various governments. Three meetings of the conference were held, all of them in London, in July, 1896, in October, 1898, and in June, 1900. The supreme control over the Catalogue is vested in an International Convention. Such a convention is to be held in London in 1905, in 1910, and every tenth year afterwards. In the interval between two successive meetings of the convention the administration of the Catalogue is vested in an International Council, the members of which are appointed by the Regional Bureaus. Regional Bureaus have already been established in the majority of civilised countries, including Japan, but not including China and Turkey or any part of South America. The offices of the Central Bureau are at 34 and 35, Southampton-street, Strand, London; the director is Mr. H. Forster Morley, M.A., D.Sc. The Royal Society has undertaken to act as the publishers of the Catalogue on behalf of the International Council.

The branches of science to be included in the Catalogue are the 17 following: A, Mathematics; B, Mechanics; C, Physics; D, Chemistry; E, Astronomy; F, Meteorology (including Terrestrial Magnetism); G, Mineralogy (including Petrology and Crystallography); H, Geology; J, Geography (Mathematical and Physical); K, Palæontology; L, General Biology; M, Botany; N, Zoology; O, Human Anatomy; P, Physical Anthropology; Q, Physiology (including Experimental Psychology, Pharmacology, and Experimental Pathology); and R, Bacteriology. Each complete annual issue of the Catalogue will thus consist of 17 volumes, the price of which will be £18; individual volumes will be sold at prices varying from about 10*s*. to 35*s*. Each volume has an English preface, the same for both. After this there come from eight to 12 pages (i.e., from four to six leaves) of introductory and explanatory matter relative to the contents of the individual volume; this portion is repeated four times—namely, in English, French, German, and Italian. From 40 to 50 pages are occupied by these preliminaries, after which come the two essential parts of the work—namely, the Authors' Catalogue and the Subject Catalogue. The various headings and sub-headings are given in English only. The titles of papers are in the language of the original when that is Latin, English, French, German, or Italian. When, however, that language is not one of the five above mentioned a translation into one of these five languages is added. In the conclusion of the preface it is stated that the task of preparing the Catalogue would be greatly facilitated if editors of scientific journals and authors of papers would coöperate in indexing each paper at the time of its publication.

Vol. I. of the Catalogue is the first part of the section of Botany. The Authors' Catalogue fills about 80 pages and gives the titles of 1922 papers arranged under the authors' names. The Subject Catalogue occupies about 240 pages and, of course, consists of the same titles rearranged under about 120 various headings.

Vol. II. of the Catalogue is the first part of the section of Chemistry. The Authors' Catalogue fills 112 pages and gives the titles of 2455 papers arranged under the authors' names. The Subject Catalogue occupies 284 pages and consists of the same titles rearranged under about 180 various headings.

In these two volumes, however, there do not appear to be any papers taken from medical journals. Under Botany there is a section on Diseases of Plants, but it is obvious that the treatment of disease in the animal kingdom could find no place under any of the 17 specific divisions of the Catalogue. The method of selecting the publications from which papers are catalogued is not explained, but under the sub-heading of Physiological Chemistry a few papers of a strictly physiological nature are entered, with titles such as "The Elementary Composition of Nucleohistons and Nucleoproteids from the Cells of the Thymus Gland," "Action of Nicotine upon Nerve Cells," "An Experiment on the Effect of Inhalation of Ethylene," and "The Action of Ether and Chloroform on the Cerebral and Spinal Neurons of Dogs." It is improbable that no papers of this description have appeared in medical journals during 1901; more information as to the method of selection will, however, be accessible when the volumes O on Human Anatomy and Q on Physiology have appeared.

The enormous extent and complexity of contemporary scientific literature have hitherto seemed almost to defy epitomising, but the work has now been undertaken in earnest and with resources equal to the difficulties of the task. The volumes before us have evidently been compiled, edited, and arranged with much ability and care; they are also well printed on good paper. It is hardly possible that no omissions can have occurred and no opening have been left for criticism, but the present Catalogue will be a welcome aid to all persons interested in natural science and an indispensable work of reference in every library.

Introduction à l'Étude de la Figure Humaine. (*Introduction to the Study of the Human Figure.*) Par le Docteur PAUL RICHER, de l'Académie de Médecine. Paris: Gaultier, Magnier et Cie. Pp. 190. Price 10 francs.

THIS is the first of a double series of volumes which are to be published on the human form. The scientific series is to treat of Man, Woman, the Child, the Old Man, the Physiology of the Nude, "Plastic Anatomy" (*l'Anatomie Plastique*), and Sports. The artistic series is to illustrate Man in Art and Woman in Art. It appears that the two series are to be devoted to a study of the human form from every point of view and under all conditions and that they are, moreover, to give a history of the manner in which these conditions have been represented by the artists of all periods

and in every country. The work is, it is evident, an ambitious one.

The first volume, the only one which has yet been published, is not illustrated and is meant to serve simply as an introduction. It is divided into three parts devoted respectively to Science and the Plastic Arts, to the Science of the Nude, and to Æsthetic Science. Dr. Paul Richer teaches that the changed conditions of life demand new developments of art. Man is master of space, of the earth, and of the sea. Let the artist awake, he says, for great hopes and high ideals are before him. Let him seek his inspiration and his models, not in a past which can never return, but in a present which lives and palpitates around him. There he will find the germs of the new art. Everything is changing. Human nature is undergoing a process of evolution. The golden age of pagan times is no more, nymphs and goddesses alike have disappeared. The Age of Faith has passed and with it has gone the simple and subtle art of the Middle Ages. Science dominates the present century and before her the phantoms of the past vanish. Her course is irresistible. Her goal is noble, her ideals are high, yet in conquering she sometimes leaves regrets behind. In an age of coal and of iron the black smoke too often envelops us in a veil which hides the heavens; yet in the midst of uncertainty and of anguish the beneficent action of Science tends to free herself. Progress slowly but surely pursues her course and the future is hers. With her aid Art will open to us clear regions and carry us to the realms of light.

It is clear that Dr. Richer takes a very cheerful view of the progress and ends of the new art. The most attractive part of the two volumes which are to follow will undoubtedly be the illustrations and of these no judgment can be formed from the present volume. It may, however, be said that the conception of the work is full of promise, that the first book is well printed in specially designed and clear type and on good paper, and that the volume has the advantage of being bound in the English fashion.

The Hygiene of Schools and Scholars, for Teachers and Parents. By H. BEALE COLLINS, M.R.C.S. Eng., L.S.A., D.P.H., &c., Surgeon, Royal Navy (retired); Medical Officer of Health of Kingston-on-Thames, &c.; formerly Assistant Instructor in Hygiene in the Royal Navy. London: Ralph, Holland and Co. 1902. Pp. 152.

THE author does not lay any claim to originality in this little book which he says is "largely a compilation from the works of many authors." He also truly remarks in the preface that there are many books similar in scope to this handbook, but, nevertheless, having regard to the general ignorance amongst teachers and parents which prevails concerning the subjects treated of the amount of teaching is not likely to be overdone.

In writing, the author had a clear idea of what he wished to teach and for whom he was writing. The book is divided into 11 chapters, dealing respectively with the Head, the Eyes, the Neck and the Throat, the Arms and the Hands, the Effects of Instruction and Exercises on Growth, Fatigue, Food, Infectious Diseases, the Theory of Warming and Ventilation, the Practical Methods of Ventilating, and "School Accidents." There is a good deal of original matter in the volume and this is certainly the best part of it.

The teaching may be divided into two parts which, however, are intimately mingled. There are in the first place the things which will appeal directly to any person of ordinary intelligence, and of these many will be either new to not a few readers or if familiar will be exhibited to them in a new light. For example, the chapters on Fatigue and on Food will be found generally useful. In the second place a number of facts are given which will be less readily understood. Such, for example, are the remarks on the structure of the eye, on sight, and on the method of taking specimens of the membrane of diphtheria for bacteriological examination. But any intelligent reader will be able to learn enough to see that there is a real reason in the one case for taking something from the throat of the child and in the other that it is important that in certain conditions the sight should be investigated by a skilled person. The book is unusually free from extraneous and foolish matter. There are a few exceptions—for example, some fanciful diagrams (for which the author is not responsible) of energetic and tired hands, a quotation saying that "the brain is made up of explosive material," and something rather silly about "waves of epidemicity." The book will be found to contain a great deal of useful information plainly stated and its general tone is that of common sense which is truly said to be the most rare of senses.

LIBRARY TABLE.

Clinical Illustrations of Diseases of the Fallopian Tubes and of Early Tubal Gestation. A Series of Drawings with Descriptive Text and Histories of the Cases. By CHARLES J. CULLINGWORTH, M.D., Hon. D.C.L. Durh., F.R.C.P. Lond. Third edition, revised. London: Henry J. Glaisher. 1902. Pp. 77, 10 × 6 inches. Price 10*s.* 6*d.* net.—There is no one in this country at the present day who has done more than Dr. C. J. Cullingworth to establish upon a firm basis our knowledge of the diseases of the Fallopian tubes. Not only has he by his writings enabled us to recognise more easily their symptoms and physical signs, but he has taught us much about their pathology. It is with great pleasure, therefore, that we welcome the appearance of a third edition of this little atlas. It has undoubtedly played an important part in diffusing knowledge upon the subject and has been, as its author hoped it might be, of service to practitioners in "furnishing them with clearer ideas respecting tubal disease and enabling them more fully to realise the processes actually taking place in cases that they are constantly being called upon to treat." The principal changes in this edition consist in a partial rearrangement of the contents of the book. The summary has been transformed into an introductory chapter and one of the specimens as a result of further examination has been renamed and re-described. We could wish that Dr. Cullingworth had carried his re-arrangement a little further. No doubt he has some good reason for not placing similar specimens and conditions under the same headings or on the same plates. We think that such an arrangement would have led to clearness and completeness of description and would certainly have contributed to the comfort of the reader. As an instance of what we mean the history of Fig. 1, Plate IV., is given under Plate VIII., and for the history of Fig. 2, Plate V., we are referred back to p. 19. An account of Fig. 3, Plate XI., a case of tubal abortion, is introduced between the description of the external appearances (Fig. 2, Plate XI.) and the description of the section (Plate XII.) of a case of unruptured tubal gestation. Even if the exigencies of colour printing require the specimens to be reproduced upon separate plates the descriptions might at any rate be allowed to run continuously. With this slight reservation we have nothing but praise for a well-known and most excellent book.

The Human Body. By BUEL P. COLTON. London: The Scientific Press, Limited. Pp. 423. Price 5*s.*—This is a book of instruction in elementary physiology together with a chapter on First Aid and sundry appendices. The book opens with instructions to teachers which are excellent, especially where the writer insists upon the necessity of making the child understand the reasons for anatomical facts. With regard to the paragraph, "Reform in Nomenclature," we agree with Mr. Colton where he says that terms

such as "up," "down," "front," and "back," are confusing when four-legged animals such as rabbits are used for demonstration. He therefore proposes that "anterior" should be used as meaning "towards the head," and "posterior" as meaning "towards the tail." But at the end of the paragraph he remarks: "Precaval and postcaval veins we should say instead of anterior vena cava, posterior vena cava." Here he is not consistent, for according to his own theory the vena cava which comes down from the head region to the heart should be called "anterior." Why, therefore, introduce a new word, "precaval"? The lessons in physiology are well thought out, but we must take exception to the chapter on Accidents to the directions for the treatment of poisoning by corrosive acids. True, Mr. Colton is only secondarily responsible, for he says that they are taken "from the excellent text-book of Nursing by Clara Weekes Shaw." The quotation says: "Acids: acetic, citric, muriatic, nitric, oxalic, sulphuric, tartaric. All highly corrosive ..... Induce vomiting: give demulcent drinks." To begin with we do not think that citric acid can be reckoned as corrosive in the same class with the mineral acids, and, above all, emetics should never be used in a case of poisoning by the mineral acids or by acetic acid. On the whole, however, the book will be found to be useful.

Essays in Medical Sociology. By ELIZABETH BLACKWELL, M.D. Geneva, U.S. Two volumes. London: Ernest Bell. 1902. Vol. I., pp. 309; Vol. II., pp. 251.—These essays are stated by the writer to have been republished "at the request of friends." Several of the chapters deal with unsavoury subjects on which too much has already been written. The author teaches that "hydrophobia, cholera, and even small-pox appear to have been caused by fear," and thinks that "the extent to which even the so-called microbes of infectious diseases may be produced by fear acting on idiosyncrasy demands very serious investigation." The scientific investigation proposed may possibly commend itself to the medical officer of the Local Government Board. What a vast field of research it would open and in what well-chosen terms would Mr. Power propound the problem to be solved and suggest the general lines on which the investigation should be carried out by the members of his department. It is to be feared that the scientific staff of the Board have other, and perhaps less important, work on hand at present, so perhaps the "younger generation of workers" to whom the author appeals may find her suggestion "helpful" and work the question out for themselves.

Atlas und Grundriss der Gynäkologischen Operationslehre. (Atlas and Outlines of Gynæcological Operations.) By Dr. OSKAR SCHAEFFER. (Lehmann's Medical Hand-Atlases.) With 41 coloured and 21 partly-coloured illustrations. Munich: Lehmann. 1902. Pp. 94. Price 12 marks.—This volume of Lehmann's Medical Hand-Atlases gives a clear account of the more important gynæcological operations, both vaginal and abdominal. It is illustrated by a number of drawings of various stages of these operations and the text is clearly and concisely written. The book should prove of value to students and young practitioners who may not have any opportunity of seeing the operations actually performed. Such a guide, however, cannot do away with the necessity of the student actually witnessing the various procedures carried out upon the living patient. The stages of an operation as represented by the artist and as seen during its actual performance are two very different matters. Illustrations of operations, however, are the best material for reproduction in such a series of atlases and the present work is quite on a level with the best of its predecessors.

The Force of Mind, or the Mental Factor in Medicine.—By ALFRED T. SCHOFIELD, M.D. Brux., M.R.C.S. Eng., Honorary Physician to Friedenheim Hospital, author of "The Unconscious Mind," "The Springs of Character," &c. London: J. & A. Churchill. 1902. Pp. 309. Price 5*s.* net.—The author states that the "exciting cause of this book" was a criticism to which his views were subjected by our contemporary the *British Medical Journal* in April, 1897. The incubation period of the work therefore has been a long one. A list is given of "some writers and their works helpful in studying the mental factors in medicine." The list occupies seven pages and it may be presumed that the author has made a study of these authorities. They include Sir Francis Bacon and Mrs. M. B. Eddy, Plato and Dr. Hyslop, Solomon and Dr. A. T. Schofield. The book itself will not repay perusal.

War Echoes. By J. B. PIKE, L.R.C.P. Edin., M.R.C.S. Eng. Loughborough: *Echo* Printing Works. Pp. 20. Price 4*d.*—In this small collection of lyrics Mr. Pike sounds a patriotic note and adds another to the long list of deserved tributes which have been paid to the heroism of our army in South Africa. He has attained considerable success in the delineation of various moods and waves of popular sentiment—tenderness and sympathy in the Hymn on the Death of Queen Victoria and in the piece commencing,

> "Not ours to storm the boulder'd hills
> Beneath the southern sky."

The jubilation of victory makes itself felt in "The Good Old Watchword" and in the address "To Tommy Atkins." Mr. Pike is happy in possessing tastes which supply him with an agreeable recreation in the intervals of medical practice, and we wish him every success in his ascent of Parnassus.

The Book of Vegetables. By GEORGE WYTHIES, V.M.H., Head Gardener to the Duke of Northumberland, K.G. Together with chapters on the History and Cookery of Vegetables, by the Editor. London and New York: John Lane. 1902. Pp. 106. Price 2*s.* 6*d.* net.—We welcome this little book, which is the seventh of a series of handbooks on practical gardening published under the general editorship of Mr. Harry Roberts. We have already called attention to two of these works, of which one dealt with asparagus and the other with old-fashioned flowers. The most interesting and useful part of the present volume from the medical point of view is that which is contributed by the editor on the dressing of vegetables. Some of the recipes which are given deserve high commendation. Amongst these may be mentioned those for minestra (p. 80) and the first of the two for pea croquettes (p. 99). It may be safely said that whilst in no country is greater extravagance shown in the expense incurred in growing vegetables, in no country is less trouble taken in preparing them for the table. Mr. Roberts gives a number of hints as to the manner in which attention in this respect may be usefully employed. As a rule the editor adopts the phraseology of the cook, but in speaking of the division of cabbages he advocates the use of "vertical incisions"—a term perhaps new to the kitchen. Every true Londoner will agree with Mr. Roberts in regard to the baked potato. Mr. Wythies's part of the book does not call for lengthened comment in these columns. It may be said that his views about vegetables are generally correct, that his recommendation of the varieties which should be grown is generally based on their excellence rather than their size, and that his writing is unusually free from the absurd egotism and conceit which characterise the writings of most "professional gardeners." The letters V.M.H. which appear after his name signify that he has received the Victoria Gold Medal of Honour in Horticulture. He seems to have the modesty of real knowledge.

Spain: Holiday Notes and Impressions. By HENRY RUNDLE, F.R.C.S. Eng. London: Adlard and Son. 1902. Pp. 11.—In this pamphlet, which is reprinted from the August number of the *St. Bartholomew's Hospital Journal*, Mr. Rundle gives an entertaining account of a short tour in

Spain last February. Travelling by Paris and Bordeaux he entered Spain at Irun. The chief cities visited were Burgos, Madrid, Seville, Granada, Cordova, and Toledo; an intended journey to Barcelona was abandoned on account of the disturbances in the town. He does not seem to have been favourably impressed with the Spanish hospitals which he saw. There was no opportunity of seeing a bull-fight. One of the party went to a cock-fight which seems to have been a cruel affair and mainly an excuse for betting.

Medical Societies.

GLASGOW SOUTHERN MEDICAL SOCIETY.—The first meeting for the session 1902–03 of this society was held on Oct. 2nd, Dr. John Stewart, the retiring President, being in the chair.—The following gentlemen were unanimously elected to the various offices: Honorary President: Dr. James Finlayson. President: Dr. D. Macgilvray. Vice-Presidents: Mr. Thomas Richmond and Dr. J. Fraser Orr. Secretary: Dr. A. Wauchope. Editorial Secretary: Dr M. Dunning Seal Keeper: Professor Ralph Stockman. Extra members of council: Dr. James Hamilton, Dr. R. J. Carroll, and Dr. James Weir. Court Medical: Dr. John Stewart, Mr. R. H. Parry, Dr. William Watson, and Dr. H. L. G. Leask. Representative to board of governors of Victoria Infirmary: Dr. Charles E. Robertson.—The chief item of interest and one which occupied the serious attention of the members present was the summarised report of the proceedings of the sub-committee of the governors of the Victoria Infirmary, which Dr. Robertson succeeded in obtaining to inquire into the abuses of the hospital dispensaries by the general public and to report thereon. It was a matter for regret that the general committee of the hospital did not consider the evidence adduced sufficient to warrant further investigation necessary without the coöperation of the other hospitals. The sub-committee was thanked for its services and discharged. Dr. Robertson protested against this action on the part of the governors and stated his determination to make personal investigation into the matter and to make public the results of such inquiries and the action of the governors in connexion therewith.—A vote of thanks to Dr. Robertson and Dr. Stewart concluded the meeting.

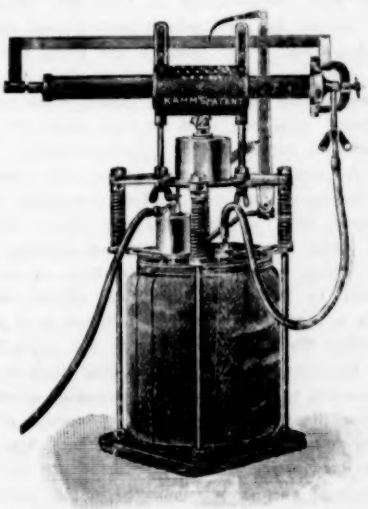
ÆSCULAPIAN SOCIETY OF LONDON.—A meeting of this society was held on Oct. 3rd, when Dr. T. G. Stevens, the President, delivered his inaugural address entitled Gynæcology in General Practice. He pointed out that some of the difficulties of treating uterine ailments lay in the infrequent opportunities of medical men to make examinations during student life and also in early practice. Some thought that gynæcology was enshrouded with mystery, but to think so was erroneous, for women's diseases and their treatment and other diseases and their treatment were similarly based. He said that the importance of uterine displacements depended on consequent symptoms. If symptoms were present that yielded to medicinal and dietetic treatment it was better to leave the uterus free of pessaries though misplaced. A retroverted or flexed uterus produced symptoms only when congested and caused pressure by enlargement on the bladder or the rectum. When the symptoms were relieved the displacement must be reduced and a pessary inserted. If in the knee-elbow position the uterus could not be replaced bimanually pelvic adhesions were generally present. The President laid particular stress on the risk of infection through the use of a sound and objected to local applications in cases of endometritis and erosions, holding that those cases of endometritis which were not cured by copious vaginal douching with hot water were better treated by curetting, as were erosions.

BRITISH ELECTRO-THERAPEUTIC SOCIETY.—An ordinary meeting of this society was held on Oct. 3rd at the Medical Society's Rooms, Chandos-street, W.—Dr. Donald Baynes, in the absence of the President, occupied the chair.—Dr. H. Manders read a paper on Some Phenomena of the High Frequency Currents and demonstrated a portable apparatus.—Mr. Chisholm Williams then read a paper on High Frequency Currents in the Treatment of Some Diseases, with an exhibition of a complete installation.—The paper was discussed by Dr. Armstrong, Dr. Batten, Dr. Cowen, and Dr. G. H. Rodman.

New Inventions.

KAMM'S MEDICAL OXYGEN GENERATOR.

WE have recently had an opportunity of watching the working of this generator and of examining the oxygen gas which it produces in regard to purity. As will be seen from the illustration the apparatus is of simple construction, consisting of (1) a retort containing cylinders of chlorate of potash which is heated by a spirit lamp, and (2) a container situated beneath to store the gas as it is generated. Before reaching this container the gas passes through a purifier containing soda lime. The container, as it expands, acts against some vertical spiral springs so that the gas is kept



The oxygen generator with the container full.

at a definite pressure. The apparatus works automatically. As the gas is withdrawn for medical purposes, as in inhalation, the container sinks and by means of a spring a steel lever at the top is pulled forward and thus a fresh part of the retort containing more chlorate is brought over the spirit lamp. The action is thus continuous until the chlorate in the retort has been exhausted, at which point another retort may be substituted without interrupting the supply of gas or its withdrawal. A retort full of chlorate cakes will produce about four cubic feet of oxygen gas. The cake consists of a mixture of four parts of chlorate of potash and one part of oxide of maganese. We carefully examined the oxygen gas for impurities, and especially chlorine compounds and other irritating bodies, but without a positive result; further, the gas was completely absorbed by alkaline pyrogallate. This generator has been especially designed for medical purposes and the details of its construction are based on sound engineering principles. It is safe and easy to work, is made of good material, and is compact and portable. The generator is made by Messrs. L. Kamm and Co., engineers and manufacturers, 27, Powell-street, Goswell-road, London, E.C.

SMALL-POX IN SCOTLAND.—The Local Government Board for Scotland intimates that during the period from Sept. 16th to 30th inclusive only three cases of small-pox have been notified, these cases occurring in the Burgh of Dundee.

THE LANCET.

LONDON: SATURDAY, OCTOBER 11, 1902.

The Regulation of the Manufacture and Sale of Ice-Creams.

FOR over 20 years we have persistently urged in our columns the need for legislative control over the manufacture and sale of ice-creams. We therefore welcome with extreme satisfaction the probability that the reform which we have indicated for so long will shortly be realised. On Nov. 1st the London County Council (General Powers) Act, 1902, which received the Royal assent on May rd, will come into force and in this Act there are clauses relating to ice-creams which, when put into effect, should wipe out what we have again and again stigmatised as a terrible danger to the commuuity.

Under the new legislation the person who causes or permits ice-creams or any similar commodity to be manufactured, sold, or stored in any cellar, shed, or room in which there is any inlet or opening to a drain, or which is used as a living-room or sleeping-room, shall be liable for every such offence on conviction in a court of summary jurisdiction to a penalty not exceeding 40*s*. The same penalty will apply if the maker of ice-creams does any act or thing likely to expose such commodity to infection or contamination, or omits to take proper precaution for the due protection of such commodity from infection or contamination. Again, any neglect to give notice of the outbreak of any infectious disease amongst the persons employed in the business of ice-cream making or amongst any persons on the premises to the medical officer of the sanitary district in which the premises are situated will entail a similar penalty. Moreover, the itinerant vendor of ice-cream will be required to exhibit in a legible manner on a conspicuous part of his barrow a notice stating the name and address of the manufacturer. Non-compliance with this provision is subject to the same penalty. The duty of instituting proceedings and recovering penalties imposed rests with the sanitary authority for the district in which the offence was committed. Such in brief are the clauses in the Act relating to ice-creams, and the Corporation of the City of London has lent its support to the measure.

This support is fully justified by events which have taken place during the last few months. In the report just presented to the Sanitary Committee Dr. W. COLLINGRIDGE, medical officer of health of the City of London, records numerous instances of illness traceable to the ingestion of ice-creams. The patients were mostly boys engaged in the General Post Office, and although the stories of the illness are not all equally clear they make up as a whole a sufficiently striking report. On July 29th, in particular, the medical officer of the General Post Office reported that he had a record of 13 suspicious cases presenting symptoms comprising colicky pains, headache, vomiting, diarrhœa, and nervous depression. On bacteriological examination Dr. KLEIN found the ice-cream to be innocent, but in other cases microbes were found which were "by no means of a harmless kind" although their numbers were comparatively small. Dr. COLLINGRIDGE considers as the result of the inquiry that the following facts have been established: (1) that in a number of cases of illness occurring among young persons of a susceptible age the symptoms were strictly identical and were characteristic of poisoning by ingestion of toxic material; (2) that the cases reported followed the ingestion of ice-creams; (3) that ice-creams subsequently obtained at shops frequented by the patients contained bacilli of a virulent character. There is an exception to this conclusion, as is obvious from the case cited above, in which though the ice-cream was undoubtedly poisonous but few bacteria were found and those of the harmless kinds, but as a matter of fact the bacteriological connexion between the ingestion of ice-cream and acute poisoning has been established over and over again. To continue with Dr. COLLINGRIDGE'S conclusions, he considers (4) that the symptoms observed were those generally following the ingestion of material containing virulent bacilli; and (5) that where pathogenic bacilli were found the ice-creams had been manufactured under insanitary conditions.

The last conclusion is to our minds the most important one Long before bacteriology came to our aid in affording a means of tracing the dangers of eating ice-cream to a definite source the appalling conditions under which ice-cream was commonly prepared were exposed by THE LANCET. The report of THE LANCET Special Commission on the Sanitary Condition of the Italian Quarter, published on Oct. 18th, 1879, p. 590, contains the following passages proving the industry to be not only a disgusting one but admirably suited for the widespread dissemination of disease. "The milk, the eggs, the cornflour mixtures, &c., used to make the penny ices are left standing in the foulest dens, where they must absorb the noxious gases that infect the atmosphere, and where they are boiled and mixed in the saucepans and cauldrons in which the Italians scald and wash their dirty linen." "The drains were so constantly stopped that they overflowed and the inhabitants had to place planks on stones so as to step from house to house without treading in the sewage matter lying exposed." It was not difficult having regard to this filthy and disgusting environment to predict the bacteriology of ice-cream. But it is difficult to believe that such categorical exposure of a foul danger to public health should not have been followed by reform until more than 20 years have passed. Bacteriology has recently confirmed our words exactly. Bacilli of the colon series have invariably been shown to be present in the ice-creams exposed for sale in the streets. In spite of our representations on the subject in these columns from 1878 to the present time no real attempt has been made to check the evil and every year since has claimed its quota of victims to poisonous ice-creams. Now, however, the agitation for reform which we are proud to think began in THE LANCET is to be brought to a definite issue and to no one can the promised

result be more gratifying than to ourselves. The end of poisonous ice-creams ought to be in sight. We append references to the more important of our previous articles upon this subject that our readers may see how entirely the approaching legislation is necessary.[1]

The Treatment of the Jugular Vein in Certain Cases of Disease of the Middle Ear.

THE operation of mastoidectomy, which is of comparatively modern introduction, has done much to rescue from obloquy the treatment of suppurative diseases of the ear, but there still remain many cases in which, in spite of this operation, the patient dies as the result of general septic infection. It is universally recognised that in practically all instances this general infection is the result of an extension of the septic process from the middle ear to the lateral sinus with infection of the blood-stream. This may or may not be accompanied by the formation of a thrombus in the lateral sinus. In many cases this thrombus is at first at least aseptic and serves as a valuable check to the general dissemination of the septic organisms which have given rise to it, but in other cases the clot breaks down early and septic emboli are carried off by the blood-stream, giving rise to pyæmia. Sometimes, again, although a clot forms, the channel of the sinus is not blocked, the clot forming only on one wall and constituting a "mural clot." This is a specially dangerous form should the clot be infected with micro-organisms, for there is no pretence even of obstruction of the blood-stream and general infection is almost certain to occur.

In such cases as these how can septicæmia and pyæmia be prevented? When the disease is absolutely confined to the temporal bone mastoidectomy can accomplish all that is required. With the removal of the diseased bony tissue all signs and symptoms subside. If, however, the disease has involved the lateral sinus the only hope of a spontaneous cure lies in a thrombosis of the sinus; this is nature's method of shutting off from the general blood-stream the infective focus. Should, alas, the thrombus itself become infective the thrombosis has been in vain and general infection will almost certainly occur. What can be done to prevent such a catastrophe? In this case, as in so many others, the best treatment appears to be indicated by the methods of nature. At the recent Manchester meeting of the British Medical Association there was a discussion on the indications for the ligation of the jugular vein in lateral sinus pyæmia. This was introduced by a paper by Mr. CHARLES A. BALLANCE which was published in full in THE LANCET of Sept. 20th, p. 795. In that paper he urges with remarkable wealth of quotation the advisability of operating on the jugular vein in all cases in which a systemic disturbance is depending on a local infective process starting from the middle ear. Mr. BALLANCE considers that the operation should be undertaken in acute pyæmia and septicæmia, whether the lateral sinus is occupied by clot or by fluid blood, also when the sinus wall is gangrenous and when the jugular bulb or jugular vein is thrombosed. If before the operation has been commenced the decision to ligate the vein has been arrived at it is advisable to deal with the vein before operating on the temporal bone, and even if the decision to tie the vein has been made during the course of the operation on the bone Mr. BALLANCE advises that the treatment of the vein should be carried through without waiting for the completion of the operation on the sinus region. When the vein is not thrombosed Mr. BALLANCE ties it at the level of the cricoid cartilage and removes it up to the jugular bulb, and he urges this treatment because thereby all the tributary veins have to be tied, and as the incision involves the external jugular vein that vessel must be tied also. If, however, there is thrombosis of the internal jugular vein the ablation should begin at its junction with the subclavian vein and the vertebral vein should be tied also. Further, we are told that the lateral sinus should be exposed for at least three-quarters of an inch beyond the area of inflammatory change towards the torcular Herophili, and, in fact, Mr. BALLANCE thinks that it would probably be better in all cases to expose the sinus and vein in one continuous wound. So extensive an operation can only be needed in certain cases, and, in fact, even mere ligature of the jugular vein should only be done in suitable cases and here the diagnostic power and judgment of the surgeon come in. As Mr. BALLANCE points out, KÖRNER relates a case in which two medical men had chiselled away the mastoid process a few days after the commencement of pains in the ear, yet the pain persisted and the temperature rose still higher. KÖRNER'S assistance was sought and with the incision of a boil in the external meatus all the symptoms ceased.

There is much to be said for the energetic treatment advocated by Mr. BALLANCE, but there is no small danger of the practice being followed unnecessarily to the ultimate discredit of the operation. The additional risk due to the ablation or ligation of the internal jugular vein is certainly small, but it must not be ignored. On a careful and wise selection of the cases the reputation of the operation must depend. In suitable cases and in skilful hands this method of treatment of the jugular vein affords a material enhancement of the probability of recovery in suppurative disease of the middle ear.

The Addresses of Two Distinguished Visitors.

DURING the last 10 days London medical audiences have welcomed addresses from two leading men of other countries—Professor W. ERB of Heidelberg, one of the first of German neurologists, and Professor W. H. WELCH

[1] Some estimate of the publicity which we have given to the subject from 1878 to the present time will be gained from the following references: THE LANCET, August 24th (p. 264) and Oct. 12th (p. 534), 1878; Oct. 18th, 1879 (p. 580); May 17th (p. 923) and Sept. 6th (p. 441), 1884; June 13th (p. 1094) and Sept. 19th (p. 537), 1885; Sept. 1st, 1888 (p. 433); July 18th, 1891 (p. 139); July 16th (p. 156), August 27th (p. 496), and Sept. 10th (p. 623), 1892; August 5th (p. 316) and Oct. 21st (p. 1011), 1893; Feb. 17th (p. 427), August 18th (p. 398), and Oct. 13th (p. 862), 1894; Feb. 2nd (p. 299), August 24th (p. 472), and Nov. 9th (p. 1177), 1895; August 22nd, 1896 (p. 549); April 24th (p. 1160), July 17th (p. 143), and Dec. 4th (p. 1458), 1897; June 18th (p. 1707), July 2nd (p. 63), and 16th (p. 164), August 20th (p. 509), Oct. 1st (p. 904), and Nov. 12th (p. 1305), 1898; June 17th, 1899 (p. 1682); Jan. 13th (pp. 136 and 138) and 27th (p. 256), Sept. 22nd (p. 908), Oct. 13th (p. 1109), Oct. 20th (p. 1149), and Nov. 10th (p. 1391), 1900; and May 18th (p. 1417) and 25th (p. 1484), 1901.

of the Johns Hopkins University, one of the most acute and inspiring pathologists of the day. We publish their addresses in our present issue.

Professor ERB'S name is familiar to medical men, not only in his own country, but wherever scientific medicine is studied. His researches into the complicated problems of nervous disease have thrown light on many obscure and perplexing points; and his clear clinical descriptions of types of nervous disease which had previously been confused or unrecognised have led to more than one group of pathological symptoms being known by his name. Had his work on muscular dystrophies been his only achievement he would have gained for himself a high place in medical history; but his contributions cover almost the whole field of neurology, and alike in clinical description, in diagnosis, and in therapeutical suggestions he is rightly regarded as a master. In the opening lecture at the West London Post-Graduate College he gives an excellent example of his powers of clinical description, dealing with illuminating skill with rare but definite types of spastic spinal paralysis, formerly jumbled up with many others under the term "spastic paraplegia." The very existence of primary lateral sclerosis due to primary degeneration of the lateral columns, when he first described it, was doubted by many physicians owing to the scanty pathological evidence. But Professor ERB was able to quote numerous careful pathological records which put its existence beyond question. In addition he separates the cases into three groups, those coming on from unknown causation, those where there is a definite family proclivity, and those due to syphilis. Paraplegia due to gross syphilitic inflammatory lesions has, of course, long been recognised, but Professor ERB maintains that there is a type in which primary degeneration of the lateral columns occurs as a post-syphilitic process exactly similar to that occurring in the posterior columns in tabes. The lateral column sclerosis appears, as a rule, however, at an earlier date after infection than tabes does. The lecture requires to be carefully read and to be studied throughout, when its full suggestiveness will come into prominence.

Professor WELCH delivered the fourth Huxley Lecture at Charing Cross Hospital. He needs but little introduction to an English audience. He is well known, not only by his article on Thrombosis in CLIFFORD ALLBUTT'S System of Medicine, but by the immense amount of careful original work which he and his collaborators have published from the Johns Hopkins University. In his address at Charing Cross Hospital Professor WELCH gives an admirable and judicial account of the theory of immunity and of the researches which led to the establishment of the doctrine. He discusses EHRLICH'S views as to the nature of immunity and its clinical value and possible developments. In his address he pays generous tribute to the work of WRIGHT, MACFADYEN, the late WALTER MYERS, and other English workers who have done so much in investigation of immunity and allied problems. The gain of these investigations to humanity has been enormous. When we realise the enormous amount of work already done, of which Professor WELCH gives such a lucid summary, it is difficult to realise that 14 years ago the subject was barely hinted at; but the greatness of these additions to knowledge and to our therapeutical resources may be looked on as sound evidence that we have in them an instalment only of what is to come. The address, therefore, is not only most instructive in itself, coming from a man thoroughly familiar with the subject on which he speaks so clearly, but it should be stimulating in inducing students to take up a promising field of research. Professor WELCH laments the restrictions which are placed on experimental research, the only way by which the necessary investigations can possibly be made, and we can cordially echo his opinion that "to restrict unnecessarily and unjustifiably the use of the experimental method is nothing short of a crime against humanity." We do not, however, think that the legal restrictions in this kingdom upon research work are of a vexatious nature or that our leading physiologists find them so.

It is much to be regretted that there are not more frequent opportunities for eminent men of other countries to visit our medical schools. It is a personal pleasure to members of the medical profession in this country to see in the flesh those they have long reverenced as masters, while such visits emphasise the fact that science knows no distinction of country and that all are working for common aims—the increase of knowledge and the relief of suffering humanity. We have been more fortunate in this respect of late years. METCHNIKOFF and EHRLICH have lectured at the Royal Society, VIRCHOW gave the second Huxley Lecture, and HITZIG delivered the last Hughlings Jackson Lecture at the Neurological Society. We trust that the custom of inviting distinguished foreigners to come among us, thus happily inaugurated, will become a firmly-established one.

Annotations.

"Ne quid nimis."

MISQUOTATION AND OTHER DISHONOURABLE PRACTICES.

WE have had to deal recently with a little epidemic of cases of dishonourable practices whereby some unfair advantage has been attempted to be obtained by the use of the name of THE LANCET. In one case the name of this journal has been unwarrantably used to bolster up a quack "remedy" for influenza; in another case our remarks on a certain infants' food were deliberately misquoted; and in yet three other cases unauthorised reprints of articles which have appeared in THE LANCET have been made for commercial purposes. We have recently[1] dealt with the case of the influenza "remedy" and of the infants' food, so that we need not here refer to them again at length. With regard to the illegal reprinting of articles which have appeared in THE LANCET, it does not seem to be generally known by enterprising tradesmen that there is such a thing as copyright. We have within the last few weeks had to call upon three well-known and responsible firms to deliver up to us close upon 100,000 copies of reprints from our columns which have been illegally made, and also to require them to give undertakings not to offend again in a similar manner. The unscrupulous adventurer will, of course, go on offending to the end of time, or at any

[1] THE LANCET, Sept. 6th (p. 703) and 20th (p. 829), 1902.

rate until his methods bring him within the scope of the law at a time when it is convenient to punish him. There is, for instance, a person calling himself "Dr." Bell who, in a dirty little booklet on sexual matters which he assiduously circulates through the post, drags in a quotation from THE LANCET of many years ago which, needless to say, had not the remotest connexion with him or his quack methods. We are surprised that the authorities at Scotland Yard cannot deter this miscreant from preying upon the public by his mischievous lies, but we are informed that our own grievance against him cannot be remedied by law. There is, again, an ex-convict named Hodge, of truss notoriety, the most unscrupulous scamp we have ever had to deal with, who not only writes his own criticisms of his wares and then coolly adds the words "THE LANCET" at the end of them, but who also steals other people's testimonials and just as coolly adds that the originals are in his possession and may be seen by the *bonâ-fide* inquirer. This person likewise makes use of the names of eminent deceased practitioners—a particularly despicable trick. THE LANCET is, of course, not the only newspaper which suffers in this way, but it appears that the rogues in question are beyond legal reach, and, having no character to lose, they are also uninjured by exposure. Where public exposure can do anything the remedy is in our hands, and we begin to think that we have been too merciful in applying it. Recent experience has proved to us that there are not wanting otherwise quite respectable tradespeople who will steal from our columns or the columns of any newspaper without hesitation and consider that they are doing a good stroke of business. There are others, also reputed citizens, who dissociate our words from their context in applying them to their wares, which can only be described as a very dishonourable practice. We need hardly point out to our readers that the purveyors of valuable articles are suffering from these dishonourable practices. Among the many new drugs and methods of treatment constantly being brought before the profession there are some which undoubtedly possess merit and a few the value of which approaches the claims made for them. It is in the interests of the medical profession, and of all having professional or business relations with that profession, that the merits of such measures or substances should be made known through the legitimate channel—the columns of the medical press; but our experience proves that it is becoming almost impossible to admit articles in the columns of THE LANCET from the pens of general practitioners and others dealing with the results of their therapeutical investigations into the value of these new preparations because all the favourable passages will at once be pounced upon by the enterprising purveyor, perhaps garbled, almost certainly dissociated from their context, and scattered broadcast over the land. We are thus, perhaps, prevented, and by the very people who would profit by the publicity, from putting before our readers papers the practical value of which may be great. The public, the medical profession, and the purveyors alike suffer. The only way to remedy the position is not a satisfactory one but it is one to which we must have recourse. Wherever the law allows us to proceed against offenders we shall take action.

THE MEDICAL DIRECTORY.

THE 1903 issue of the Medical Directory, with enlarged page and other alterations, is, we understand from the publishers, Messrs. J. & A. Churchill, 7, Great Marlborough-street, London, W., well in hand, and the volume will be published before the end of the year and with the promptitude that regularly increases the value of this excellent work of reference. As the accuracy of the Medical Directory depends upon the supply to the editors of all the latest relevant information we would beg our readers to take notice that Oct. 25th is the last day upon which additions or alterations can be received by the publishers.

THE BEHAVIOUR OF SMALL-POX IN BERMONDSEY.

DURING the recent epidemic of small-pox in the metropolis the borough of Bermondsey contributed 297 cases of this disease and Mr. R. K. BROWN, the local medical officer of health, has now summarised the facts in a special report. As regards the protective value of vaccination, it has to be noted that cases have been grouped as "vaccinated" where there was "the slightest evidence of vaccination or where the parents made a positive statement that the operation had been done, though it had only 'taken' very slightly or not at all." In these circumstances it is to be regretted that no details are given in the report before us as to the number and quality of the scars, as we see that there were three deaths in vaccinated children under 10 years of age. But this notwithstanding, the vaccinated under 20 years of age (78 cases with five deaths) yielded a fatality-rate of 6·41 per cent., while the rate among the unvaccinated (31 cases with 15 deaths) was 48·39 per cent. Between the ages of 20 and 80 there were among the vaccinated 179 cases with 18 deaths, equivalent to a fatality-rate of 10·05 per cent., and among the unvaccinated six cases and three deaths, a fatality-rate of 50 per cent. Peculiar interest attaches to the borough of Bermondsey since it embraces within its limits the South Wharf of the Metropolitan Asylums Board, from which the cases of small-pox are despatched in ambulance steamers to the hospital ships in the Long Reach. It is a matter to be noted that the attack-rate of small-pox upon the region immediately surrounding the South Wharf was greater than in any other part of the borough—i.e., 5·03 per cent. of the houses in this vicinity were invaded, as against 1·24 per cent. of those in the whole borough. Mr. Brown has gone as far as practicable into the history of the cases and he thinks that defective control rather than aerial convection has been at work in the spread of the disease. It would have been helpful if Mr. Brown could have furnished a map showing the precise position of the several invaded houses in relation to the wharf, as this is a matter of very great importance in considering problems such as aerial convection. Mr. Brown thinks that "any accumulation of small-pox patients in a thickly populated neighbourhood may be a source of danger to the inhabitants unless the hospital and ambulance arrangements are managed on very strict lines, so as to prevent all intercommunication between persons employed in that hospital and the surrounding inhabitants," and he regards his facts as showing "that the danger is to be looked for in this direction and not through aerial diffusion of the infection." He suggests that the men from the ambulance steamers should not be allowed to land when and where they please. Here, then, is another serious allegation against the Metropolitan Asylums Board which it will do well to look into. Unfortunately, the repeated experiences of the Fulham Small-pox Hospital, with the facts of which Mr. Brown does not appear to be quite familiar, seemed to show that the most rigid system of isolation practicable had no appreciable effect upon the behaviour of small-pox in the vicinity of the hospital, and it was not until the metropolitan small-pox hospitals were disused that the remarkable incidence of the disease in their vicinity ceased. If the source of the undoubted mischief which so frequently results is always, as Mr. Brown

would seem to infer, *entirely* one of maladministration there is a difficulty in accounting for the fact—there are innumerable spot-maps available to establish the point—that no such peculiar incidence occurs around hospitals devoted to the "isolation" of diseases such as scarlet fever and diphtheria, even when the administration of such hospitals is indifferent. It would be idle to deny that maladministration is at times partly or wholly responsible for the prevalence of small-pox around small-pox hospitals, but it would be equally idle to affirm that such maladministration is capable of explaining all the peculiar groupings which have been so repeatedly observed both in London and elsewhere. Fortunately, an experience of many years has taught us that whatever the method of spread may be the only remedy is to avoid the erection of small-pox hospitals in crowded localities.

THE THAMES SUPPLIES OF THE EAST LONDON WATERWORKS COMPANY.

THE latest report issued by Dr. T. E. Thorpe, F.R.S., the chemist to the Local Government Board, contains a paragraph which has reference to an analysis made of a sample of water collected on July 7th from the mains of the East London Waterworks Company. Dr. Thorpe says: "The East London Company's water collected at High-street, Shoreditch, was derived mainly from the river Thames; it contained approximately the same proportion of organic matter as the other Thames-derived supplies, but a greater proportion of oxidised nitrogen." Readers of THE LANCET may remember that attention was called to the Water Examiner's report on the East London supply which was given in the month of June. "In regard to the water supplied by the East London Company Dr. Thorpe states that on June 23rd it was of inferior quality and on the 24th it 'contained a larger amount of organic matter than was found in any of the Thames waters.' Some of the East London Company's water, we may again point out, is derived from the Thames. Dr. Thorpe continues: 'As this company possesses nearly 30 days' storage it ought to have been possible to avoid the distribution of such unsatisfactory water on the dates mentioned.' The East London Company has no provision whatever for the storage of its Thames supply, which in this connexion is a matter not without interest. The Water Examiner states that 'all the samples of water collected at the works of the companies were efficiently filtered.' It does not appear that any such samples were submitted to Dr. Thorpe and it would require the ingenuity of an expert to reconcile this statement with the analyst's report concerning the accuracy of which we have no doubt whatever."[1] Dr. Thorpe's report on the water supplied by the East London Company during the month of July does not, of course, answer in any way the remarks which were made by THE LANCET on the supply given by that company during the month of June, nor is it suggested that his report is written with the intention of causing THE LANCET to soften or in any way to modify the criticism which the facts of the case rendered necessary. It has been our pleasant privilege more than once to congratulate Dr. Thorpe on alterations in form and substance which he has introduced into his reports after attention has been called to little inaccuracies which inadvertently crept into the earlier ones which he made. It is, of course, not necessarily the duty of a chemist to inquire into the original sources of the waters which are submitted to him, and the notice which he gives on the Shoreditch water is, from the point of view of the pure analyst, a work of supererogation, but it is nevertheless interesting. The information given, however, is not sufficiently complete to be of much service. In the first place, it is evident that the water referred to was not all derived from the Thames, and the proportion which was so derived is not given. In the second place, it is not stated from which of the Thames sources it was derived, for at the present time it should be known that the East London Company obtains water from two. During the month of July the average daily amount of water taken from the Thames at Sunbury was 8,015,000 gallons. This raw Thames water is filtered at Hanworth without previous storage; it is mixed with water derived from the Hanworth springs and then pumped to the reservoir in Finsbury-park, and this reservoir is capable also of receiving water derived from the Lee. During the month of July the East London Company received also a daily average amount of 1,082,000 gallons of water derived from the Thames and treated by the Southwark and Vauxhall Company. Dr. Thorpe in his report does not say from which of these two sources the Thames water of which he speaks was derived. The Water Examiner's report for the month of July contains the following paragraph: "All the samples of water collected at the works of the companies were efficiently filtered." It is not stated that any sample of water collected at any of the works of any company was submitted to Dr. Thorpe for analysis. This paragraph appears month after month in the Water Examiner's report and we have already appealed to the President of the Local Government Board to inquire as to the evidence on which the statement in regard to the efficiency of filtration is made. We have not succeeded in obtaining the information. Should it perchance happen that any Member of Parliament is interested in the metropolitan water-supply he would render a public service to the people of London if he would get a categorical answer to the question which we have suggested.

[1] THE LANCET, Sept. 6th, 1902, p. 704.

IS THE PRACTICAL WORKING OF OUR RAILWAYS EFFICIENTLY SUPERVISED?

IN an annotation in THE LANCET of Sept. 6th, 1902, p. 686, under the above heading, we pointed out that small defects, by easily escaping observation, may lead to very grave issues in connexion with the working of our great railway systems. We further stated that every linear foot along miles and miles of a railway may become a source of danger, perhaps by reason of subsidence, by a crack in the steel, or by the loosening of a chair or a pin. The derailment of trains, at any rate, would appear nowadays to be the most fertile source of accident and in these circumstances we were led to ask the question, Is the permanent way kept under constant and efficient supervision? We hardly expected within a few weeks to get a reply so directly bearing upon this question and practically in the negative from the expert to the Board of Trade in connexion with the derailment of the Flushing boat express on August 17th last, to which, amongst other recent railway accidents, we referred. We certainly appealed to the Board of Trade. The following is an excerpt from the report of Major Pringle which was published last week: "I find, therefore, that the whole blame for this accident lies with the ganger in that he neglected the ordinary regulations and precautions laid down for the protection of trains during an operation involving the obstruction of a running road. It is, however, too often the case that permanent way men in carrying out renewals of chairs and sleepers appear to be careless of the rules and regulations which have been laid down not only for the safety of the traffic of the railway but for their own safety also. *This carelessness and neglect of rules argues, in my opinion, a lack of discipline in the maintenance staff, the growth of which railway companies should do all in their power to summarily check.*" (The italics are ours.)

Surely this conclusion to a large extent supports our contention that the supervision of railway tracks and rolling-stock is not conducted with that precision and frequency which in the interest of the safety of passengers are imperative. Major Pringle distinctly brings a charge of negligence against the ganger who is the superintendent of a gang of labourers. The railway expert to the Board of Trade is thus in agreement with us that the supervision of the railway track in this instance was not carried out with that efficiency or discipline which is desirable.

SYMPATHY WITH PROFESSOR MURRI.

FROM Bologna, under date Sept. 29th, an Italian correspondent writes:—"An address of sympathy with Professor Murri having been drawn up, signed, and presented by a distinguished group of prelates, members of both Houses of Parliament, physicians, surgeons, barristers, and, indeed, professional and public men of all parties, the illustrious pathologist and consultant has written as follows to the leading local journal: 'All you say of my deep gratitude towards the eminent individuals who have just shown me such great kindness is every word of it true. But as for all the others who, not less kind and not less eminent, at home and abroad, have been equally forthcoming with their sympathy, I should not like them to think me irresponsive to their affection. My gratitude is profound towards all. And since, up till now, it has not been given me to apply my mind to any work, whether of duty or of pleasure, like that of expressing my obligations to such noble minds, so generously sympathetic, let me hope that your journal will convey, not to some only, but to all of my well-wishers, how lastingly I feel myself bound to them by the most grateful, the most cordial, of ties.'"

PREVENTION OF TUBERCULOSIS IN VICTORIA.

WE have received a copy of a report by Dr. D. A. Gresswell to the Board of Public Health, Victoria, on measures to be adopted for the prevention of tuberculosis. In the report Dr. Gresswell details the measures that are required for the prevention of human tuberculosis and refers to certain pamphlets, leaflets, and wall sheets on the subject that have from time to time been adopted and distributed by the Board. He points out that while much has been accomplished much remains to be done if the present yearly toll of victims of tubercle is to be minimised. He assures the Board that the preventive measures which are required are well known, readily understood, and easy of execution, while the reduction of mortality from the disease that has already taken place may be accepted as a source of encouragement to redouble the efforts put forth in the past. Dr. Gresswell urges that if municipal councils act fully up to their powers they will certainly vastly reduce, if they do not succeed in eradicating, the disease. We can only partially agree with Dr. Gresswell. Although we have never been advocates of notification of tuberculosis we fully grant that much may be accomplished by the careful supervision of dairies, farms, and slaughter-houses. We consider, however, that far more may be done by careful instruction by medical practitioners to their patients. The "wall-sheets" attached to the report contain most useful information concerning tuberculosis given in popular language. Due stress is laid on the need of maintaining the general health and on the importance of efficient ventilation of dwelling-houses. Minute directions are also given as to the proper disposal of sputum. In conclusion, a reprint is given of a "circular to municipal councils on tuberculosis." Suggestions are made as to the course of action such councils should take. With some of these propositions we are entirely in accord, such as the distribution, by means of leaflets and the like, of full information with regard to the modes of spread and prevention of tuberculosis. We think, however, that very little would be gained by attempting to "obtain as prompt information as practicable of the existence of every case of, and of the occurrence of every death from, one and another kind of tuberculosis, seeking such information from charitable societies, dispensaries, hospitals, schools, and registrars of death, and, if need be, paying for such notifications." The cases so detected would only form a small proportion of the cases in existence in any given distric and would lead, we believe, to needless social disasters.

THE DISTRIBUTION OF PLAGUE.

THE Director-General of the Sanitary Department of Egypt states that for the week ending Sept. 21st there was 1 new case admitted. The deaths numbered 0, the recoveries 4, and 3 cases remained under treatment. The sanitary measures carried out were as follows: 4925 rooms were disinfected and 453 were lime-washed; 182 sacks of effects were disinfected and 7096 sacks of rubbish were burned. The number of rats killed and burned was 73. As regards Cape Colony the report of the medical officer of health for the week ending Sept. 6th states that there had been no case of plague in any human being at any place in the Colony during that week but that some rats dead from plague were discovered at Port Elizabeth on Sept. 4th.

"SORE-THROAT ILLNESS AT DITCHAM" AND ISOLATION HOSPITALS.

IN a letter which will be found in another column Mr. E. D. Marriott draws attention to a recent report by Dr. L. W. Darra Mair to the Local Government Board on Sore-throat Illness at Ditcham,[1] in which Dr. Mair gave reasons for inferring that a series of cases of scarlet fever and another series of cases of diphtheria occurring on the Ditcham Park estate both had their origin in the return of a child from the isolation hospital at Portsmouth. The child in question had been in hospital for scarlet fever, but there was cause to suspect that shortly before her discharge she might have been exposed to infection from diphtheria and that a slight attack of adenitis about a week before she left the hospital was a manifestation of diphtheria. Mr. Marriott, who in our columns has before championed an attack on isolation hospitals, uses the data in this report to support his contention that on the balance these hospitals do more harm by propagating and intensifying infectious disease than by preventing their spread. Reasons for disagreement with Mr. Marriott's arguments were given in a leading article in THE LANCET of Feb. 9th, 1901, p. 412, and we are unable to find in Dr. Mair's report occasion to modify the position which then we adopted with regard to the question. It is true that the equipment and organisation of all hospitals is not perfect and that exceptionally "return cases" of scarlet fever may occur even in well-administered hospitals. But there is no reason to regard an abundance of "return cases"—using the term in its widest sense—as an inevitable accompaniment of isolation hospitals for scarlet fever and diphtheria. On the contrary, better administration and greater bacteriological knowledge have already done much to reduce them. The instance given by Dr. Mair is, so far as we know, an isolated one. It is possible that the attention which has been drawn to the subject will lead to the discovery that comparable occurrences are not infrequent, but until this is done, and until such occurrences are shown not to be preventable, the Ditcham outbreak may be regarded rather as an instructive epidemiological curiosity than as a reason for wholesale condemnation of isolation hospitals. As regards scarlet fever it

[1] THE LANCET, August 23rd, 1902, p. 551.

seems probable that "mild though temporary attacks" of the disease which Mr. Marriott apprehends among persons in the dwelling to which a hospital case returns would be at least as likely to occur if the scarlet fever patient had remained at home throughout his illness. As we understand Mr. Marriott's contention, the public and municipal authorities have been fooled into hospital isolation by their medical advisers. But "you cannot fool all the people all the time." Isolation hospitals by the score have been established and in full work for many years in this country. We have never heard of an instance where a local authority, responsible for the prevention of infectious diseases, has attempted to abandon its isolation hospital.

THE LECTURES AT THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE dates for the delivery of the official lectures at the Royal College of Physicians of London are approaching As we have already announced in THE LANCET the Harveian Oration will be delivered by Dr. D. Ferrier on Saturday next, Oct. 18th, at 4 o'clock. The Bradshaw Lecture will be delivered on Tuesday, Nov. 4th, at 5 o'clock, by Dr. C. J. Cullingworth. Dr. W. Hale White will deliver the Croonian Lectures on the following Tuesdays and Thursdays—Nov. 11th, 13th, 18th, and 20th. These lectures were prepared by the late Dr. J. W. Washbourn, C.M.G., the appointed Croonian lecturer, whose lamented death took place this summer.

"AFFLICTED LONDON."

UNDER the heading of "Afflicted London" Mr. R. Austin Freeman in Part 25 of Cassell and Co.'s "Living London" gives the first part of a short but interesting description of the daily life of those who have been deprived of the use of one or more of their bodily faculties. In one way or another a large but decreasing proportion of the afflicted seek a precarious livelihood in the streets by an appeal to the sympathy of the passer by; happily, however, there are many institutions where the afflicted poor can and do seek relief. There is a well-known factory in Tottenham-court-road where about 100 blind persons are employed. Basket-making is carried out in a most satisfactory manner by persons of both sexes, though women, says the author of the article, are much less successful than are men. Women are also employed in the chair-caning department but they are chiefly occupied in the making of hair- and nail-brushes. Men work in the carpenter's shop where the foreman casts up his accounts and makes calculations by means of a metal plate perforated by small holes into which large-headed pins can be stuck. Loom weaving is also carried on in the building. At the Cripples' Home for Girls in the Marylebone-road needlework is taught and dress-making, hatmaking, and fancy basket-making are carried on. All the inmates of the building are sufferers from diseases of the hip or of the spine or some analogous affection. There is a similar institution for boys at Kensington. At both places there is a small school for the more backward and illiterate children. The teaching of crippled children is, however, now being gradually taken over by the London School Board[1] and the horse ambulance for conveying such cripples to school has recently been described in our columns.[2] Among the institutions for the sightless may be mentioned the British and Foreign Association for Promoting the Education and Employment of the Blind and the Royal Normal College for the Blind, while there are also the blind centres of the London School Board and the reading-room for the blind in the St. George's Public Library, Cable-street, E. The illustrations include a full-page picture of the interior of the Church of St. Saviour, near the Marble Arch, with the deaf and dumb "singing" a hymn.

[1] Vide THE LANCET, Sept. 27th, 1902, p. 880.
[2] THE LANCET, May 24th, 1902, p. 1483.

CHOLERA IN EGYPT.

THE Director-General of the Sanitary Department of Egypt states that for the week ending Sept. 22nd 6388 cases of cholera were reported throughout Egypt, against 9466 during the previous week—a diminution of 3078 cases. 3394 persons were found dead out of hospital and 2414 deaths took place in hospital, against 4681 deaths out of hospital and 3597 deaths in hospital, or a total diminution of 2470 deaths as compared with the previous week. During the week 109 cases occurred in Cairo and 240 in Alexandria, against 120 in Cairo and 300 in Alexandria during the previous week. Up to the present date 1830 towns, villages, and ezbehs throughout Upper and Lower Egypt have been notified as infected.

APPENDICITIS DURING PREGNANCY.

THOUGH the child-bearing period covers the ages at which appendicitis is most common, and though some of the phenomena of pregnancy—e.g., constipation—are regarded as causes of appendicitis, relatively few cases have been recorded of appendicitis during pregnancy and the subject has received but little attention. In the *Boston Medical and Surgical Journal* of Sept. 4th Dr. Francis D. Donoghue has published an important paper in which the following case is recorded. A woman, aged 36 years, who had been married for three years, had a normal labour in October, 1900. She again became pregnant in May, 1901. On August 9th, at 11 P.M., she was seized with severe epigastric pain which was accompanied by vomiting. She had been constipated. Next day the pain and vomiting continued. The temperature was 100° F. and the pulse was 90. There was marked rigidity of the abdominal muscles, especially on the right side. The pain became localised at McBurney's point. In the evening the pain had greatly diminished, but the temperature was 100·5°, the rigidity was marked, especially on the right side, and McBurney's point was very tender. Believing that the cessation of pain without improvement of the local signs was not favourable Dr. Donoghue made a three-inch incision through the outer border of the right rectus muscle. The appendix was dark coloured, full of concretions, and surrounded by purulent serum which was partially walled off by fresh adhesions of the omentum. Cloudy serum also welled up from the side of the pelvis; this was carefully sponged out. The appendix was removed and the wound was closed except so far as to allow gauze drainage. Examination of the specimen showed diffuse interstitial purulent appendicitis and peri-appendicitis. Recovery was interrupted only by rhythmical pains which seemed to threaten abortion but which were controlled by morphia. Normal labour occurred on Feb. 26th, 1902. Mixter has reported a case of operation on an appendicular abscess after premature delivery of a dead child at seven months.[1] Mundé[2] has described a case of premature delivery of a dead child induced by acute appendicitis. The few cases since recorded give the impression that appendicitis is the most fatal extra-uterine complication of pregnancy. In cases operated on previously to 1898 a maternal mortality varying, according to different writers, from 30 to 85 per cent. and a fœtal mortality varying from 49 to 90 per cent. have been observed. A few cases operated on subsequently show better results, due principally to early operation. The high mortality has been explained by

[1] Boston Medical and Surgical Journal, December, 1891.
[2] Medical Record, 1894.

the relation between the pregnant uterus and the appendix. Clado has shown that there is an intimate relation between the lymphatics of the appendix and those of the broad ligament. Mr. Lockwood has reported a case in which the broad ligament was inflamed and swollen during an attack of appendicitis. In an observation published by Bouderet of Lyons a perityphlitic abscess opened into the Fallopian tube of the same side and emptied itself through the uterus. The child was born alive. The diagnosis of appendicitis complicating pregnancy usually should not be more difficult than that of ordinary cases. Right extra-uterine pregnancy or a small ovarian cyst with twisted pedicle might be confounded, but the differential diagnosis is not important. According to Dr. R. C. Cabot the blood is normal during the first six or seven months of pregnancy. Leucocytosis during that period with local signs in the right iliac fossa would be in favour of the diagnosis of suppuration in that region. In the latter months of pregnancy leucocytosis has been described by older writers, but recent data on the point are wanting. On account of the seriousness of appendicitis complicating pregnancy Dr. Donoghue insists upon the necessity for immediate operation. He strongly recommends the rectus incision, as it is easy to enlarge without cutting muscular fibres and there is little danger of yielding of the cicatrix. Pregnancy appears to add little, if anything, to the danger of operation.

THE INTERNATIONAL COMMITTEE OF STREET HYGIENE.

CONVENED by the chairman, M. H. Alfred Roechling, the International Committee of Street Hygiene met at Brussels from Sept. 21st to 23rd, to arrange for the next International Congress of Hygiene and Demography to be held in that city in September next year. This committee, which was appointed by the last International Congress at Paris in 1900 and confirmed by the Belgian Government, consists of 17 members representing England, America, Belgium, Holland, France, Switzerland, Germany, Austria, Hungary, Italy, Russia, Poland, Sweden, and Norway, and is charged with the study of all questions relating to street hygiene. Besides the chairman the following members were present at the conference: Lieutenant-Colonel E. von Kontkowski (Russia), Professor Pagliani (Italy), M. van der Perk (Holland), Professor Putzeys (Belgium), and M. E. Putzeys, chief engineer of Brussels. In two lengthy sittings the committee discussed the material prepared by the chairman and adopted with some alterations the propositions submitted by him, which will in due course be laid before the next Congress of Hygiene and Demography. We do not know whether the conference will take into consideration the extreme nuisance caused by the perpetual grubbing up of the streets from which we in London have been suffering for the past two years especially. The procedure shows a pretty wit on the part of those responsible. Either the pavement or the roadway is grubbed up—both, if possible. A large hole is dug and cauldrons of evil-smelling stuff are distributed about. Iron or earthenware pipes are then brought upon the scene together with bricks, large reels of cables, and heaps of mortar. The underground work being completed the wood blocks or paving-stones are replaced anyhow and left. After a certain interval of time the municipal authorities appear and relay the portion grubbed up. If in the roadway, new wood blocks are put down and not properly gravelled. Thus patches of roadway of an ice-like smoothness are left. The result is that there are frequent falls, injury to horses and possibly to carriages and their occupants, stoppage of traffic, and annoyance to everyone. This game is played at intervals, so as to extend the nuisance over as long a space of time as possible, by water, gas, electric lighting, hydraulic power, and telephone companies, and by the post office. If the conference can only do something to mitigate the above nuisances it will deserve well of many a suffering community.

THROMBOSIS OF THE CRURAL VEINS AFTER OPERATIONS.

THOUGH thrombosis of the crural veins after operations is a recognised complication it is little mentioned in surgical works. In the New York *Medical Journal* of Sept. 6th Dr. B. R. Schenck, resident gynæcologist, Johns Hopkins Hospital, has published an important paper on the subject based on 48 cases which have occurred in the 13 years during which the gynæcological department of the hospital has been open. Previous writers have based their papers on a comparatively small number of cases, hence the value of Dr. Schenck's communication. The 48 cases occurred in 7130 patients who underwent operation. The operations after which the thrombosis occurred were as follows: perineal alone, four; hystero-myomectomy and myomectomy, 19; removal of ovarian cysts, nine; hysterectomy for cancer, five; suspension of the uterus, three; suspension of the uterus with repair of the perineum, four; hysterectomy for pelvic inflammatory disease, one; miscellaneous, three. The most striking fact shown by these figures is the high percentage of cases (58) which occurred after the removal of large tumours. These are not the cases in which there is the greatest traumatism. Anæmia seems to have been a factor, for in 11 cases the amount of hæmoglobin in the blood varied from 20 to 50 per cent. So also appears to have been obstruction to the circulation, for the right leg alone was infrequently affected as compared with the left which is exposed to the pressure of the rectum. Venous thrombosis is much more common after operations on the pelvic organs than on any other part of the body, probably because of the injury to large veins. After ligature of a pelvic vein a clot forms and extends as far as the first branch and probably projects into the lumen. Clots may also form after injury to the veins, such as from the pressure of retractors. The patients were doing well and an uninterrupted convalescence was expected when suddenly pain in the left thigh or leg was complained of and there was accompanying pyrexia. The date of onset was remarkably constant. The earliest was on the sixth and the latest on the twenty-second day after operation, while in 25 cases the onset was between the twelfth and the sixteenth day and in all but four after the tenth day. Pain of a dull throbbing character, sometimes in the thigh, often in the calf or popliteal space, and tenderness along the enlarged veins were observed in all the cases. Tender enlarged glands were present in only six cases and the veins were distinctly palpable in only five. Œdema sufficient to cause pitting was noted in 38 per cent. of the cases and albuminuria in 41 per cent. Pulmonary embolism occurred in two cases. In the first a large myoma was removed from a woman, aged 39 years. On the seventh day there was acute pain over the lower left chest and a friction sound was heard. The pain continued until the fifteenth day. On the eighteenth day the patient fainted while straining at stool. On recovering consciousness she complained of a sensation of weight beneath the sternum. Examination of the lungs was negative. The symptoms of shock continued for eight hours. Next day there was pain in the left leg and well-marked thrombosis developed which was followed by thrombosis of the right femoral veins. The thrombosis lasted for four weeks. In the second case, a woman, aged 42 years, 15 days after double oöphorectomy, complained of pain in the left thigh and leg, where swelling and tenderness developed. On the

thirty-fourth day paroxysms of abdominal pain began. The abdomen was reopened. Four days later the patient became unconscious with cyanosis and gasping respiration. Examination of the lungs was negative. After half an hour consciousness was regained. A possible explanation of the first case is that soon after operation a clot formed in the pelvic veins from which an embolus was dislodged and plugged a small branch of the pulmonary artery, producing pleurisy over the area supplied by the plugged vessel. Later, extension of the thrombus caused blocking of the crural veins. A second embolus was then discharged which caused more marked interference with the pulmonary circulation. The treatment of thrombosis following operation in the Johns Hopkins Hospital consists of rest in bed with the affected limb elevated. Sometimes cold applications are made, sometimes the leg is wrapped in cotton wool. The elevated position is maintained for at least five weeks.

CLIMATIC BUBO.

FROM time to time for some years past cases have been described in tropical climates in which a chronic enlargement of the inguinal glands appeared without any obvious trauma of the skin of the lower extremities or any proof of the presence of venereal disease. The condition is nearly always accompanied by an elevated temperature and in some of the cases the inflammation of the glands goes on to suppuration. The term "climatic bubo" has been provisionally applied to this disease by Schenke and will suffice for the present. As the condition occurs in tropical climates it is only natural that malaria has been credited with an influence on its etiology, for where malaria is rife any unusual morbid manifestation is liable to be attributed to it. The latest contribution to the literature of the subject is a valuable paper by Mr. Arnold Caddy, F.R.C.S. Eng., in the July number of the *Indian Medical Gazette*. In the article he reviews the bibliography of the disease and shows that the descriptions, though relating to cases in India, Hong-Kong, Sumatra, Madagascar, East Africa, and the West Indies, all agree in the essential points. The irregular temperature simulates malaria, but quinine appears to be ineffective; some of the cases have been looked upon as examples of plague, but the two diseases agree only in the enlargement of the glands. With our present knowledge of the bacteriology of plague the two conditions are readily distinguishable. Mr. Caddy's paper contains accounts of 12 cases under his own care and these give a very clear idea of the disease. He considers that it is the result, firstly, of an anæmia and a general lowering of health produced by a tropical climate, especially when associated with hard work, and secondly, of infection through minute cutaneous lesions, such as those of prickly heat or bites by insects. In two of his cases in which a bacteriological examination was made staphylococci were found. Mr. Caddy considers that even when suppuration does not occur removal of the affected gland is generally required, for in no other way is so rapid a return to health attained. The exact nature of pestis minor has long been keenly discussed and there appears to be a great probability that many of the cases included under that title really belong to the disease under consideration.

THE FINANCIAL POSITION OF ST. GEORGE'S HOSPITAL.

A CIRCULAR letter has been sent to past and present students of St. George's Hospital Medical School and all the known friends of the hospital, pointing out that an impression has become prevalent that St. George's Hospital is a richly endowed hospital—a quite erroneous idea which has unfortunately tended to divert subscriptions from the hospital. The circular letter is signed by many members of the active and consulting staff of the hospital and with it is inclosed a memorandum dealing with the financial status of the institution. "As a matter of fact," says this memorandum, "the income which the hospital derives from invested property barely provides for one-third of the annual expenses, the remaining two-thirds, or, roughly speaking, about £25,000, having to be met from annual subscriptions and from the more precarious source of donations and small legacies. While the expenses of the hospital have necessarily been increasing year by year in consequence of the rapid advance of medicine and surgery, the income from subscriptions has been gradually falling off. In 1875 it amounted to £7838 per annum; it is now reduced to £5438 per annum. A part of the invested property of the hospital is under trust and cannot be diverted to income. Of the available stock no less a sum than £52,388 has been sold out between 1892 and the present time to meet ordinary and extraordinary expenditure and this sum has not been replaced by legacies or otherwise." As our readers may probably remember, St. George's Hospital has received during the last 12 years some large legacies, but it has also had to incur enormous expenses. The greater part of these legacies has been immediately and inevitably expended in bringing the fabric and fittings of the hospital up to the standard of the present day. A meeting of old St. George's men will be held in the hospital on Thursday next, Oct. 16th, at 4 P.M., to concert measures to obtain a more extended public support of the funds of the hospital. The treasurer of the hospital, Mr. Timothy Holmes, will take the chair. The treasurer of the medical school, Mr. Clinton T. Dent, will be in attendance and will have much pleasure in showing to all present the recent improvements in the interior of the hospital and school—a course which will justify the great expenditure that has been undertaken by the hospital authorities during the last decade. The hospital authorities consider that in order to continue the work of the hospital with confidence in the future it is desirable that the annual income from subscriptions should be increased, if possible, to £10,000 a year and to that end they hope that all their past and present students will work zealously.

THE DEATH OF DR. J. H. GLADSTONE, F.R.S.

THE sudden death of Dr. John Hall Gladstone, F.R.S., will be regretted by the chemists of all nations, for his name is internationally known in connexion with his able researches on the optical properties of matter. These researches, which were induced by the endeavour to discover definite relations existing between the optical behaviour of solid and liquid substances and their chemical composition, led to conclusions of importance respecting the connexion between the constitution of a substance and its power of refracting a ray of light which gained for him the Davey medal of the Royal Society a few years ago. His name is thus associated in the same line of work undertaken by famous chemists like van t'Hoff, Arrhenius, Ostwald, and others. This department of research has proved a fruitful method of inquiry in attacking the great question of the constitution of matter by physical methods. Dr. Gladstone was for the most part of his career a chemist, but his favourite sphere of labour was in that region lying between chemistry and physics. He gave the name of "refractive energy" to that phenomenon representing the influence of a substance itself on the rays of light. Amongst the most important conclusions at which he arrived were that both the index of refraction and the length of the spectrum diminish as the temperature rises and that the

sensitiveness of a substance is independent of its specific refractive or dispersive power. The observations which he made on these points were most valuable and were based on a very great number of laborious experiments which were generally described at meetings of the Chemical Society. Dr. Gladstone was the first President of the Physical Society in 1874 and was President of the Chemical Society in 1877. He was always a very active member of the British Association for the Advancement of Science and was present at the recent meeting in Belfast. He took great interest in the London School Board, of which he was one of the early members, identifying himself with the Progressive party. He served also in the capacity of adviser to the Government on many matters on which he possessed peculiar knowledge. By his death the Chemical Society loses one of its six past presidents able to claim a membership of over 50 years.

THE CAUSES AND SYMPTOMS OF POISONING BY ILLUMINATING GAS.

AN important discussion on the subject of poisoning by illuminating gas is published in the *Medical News* of New York of August 23rd last. In the opening paper Dr. James C. Bayley of New York, who for many years has devoted himself to the study of "gas" and ventilation, said that the chief cause of poisoning was the gradual leakage of gas which occurred from the gas mains and which permeated into the floors and atmosphere of cellars and basement dwelling rooms. Ordinary illuminating coal gas contained about 7 per cent. of carbon monoxide, which was the most poisonous constituent of gas. The more recently manufactured "water gas" contained from 30 to 45 per cent. of carbon monoxide mixed with certain naphtha materials to give illuminating power, and this was the gas supplied by the companies for illuminating purposes to all the cities of New York State. At the present time the only warning which revealed leakage was the powerful odour of the mixture. The normal average leakage of gas in the cities of New York State was great, a moderate estimate putting it at 225,000 cubic feet of gas per annum for each mile of main. In London, says Dr. Bayley, the amount of leakage from the mains was estimated by the Board of Underwriters at 1748 millions of cubic feet per annum. Many cases of anæmia and general weakness in New York attributed to disease or to overwork were, adds Dr. Bayley, traceable to slow poisoning by gas. Dr. Bayley also points out that dangerous elements in sewer-air are the carbon monoxide and naphtha vapours which escape into sewers from the gas mains. An account of the cerebral symptoms of poisoning by gas was published in these columns two years ago.[1] The danger of such poisoning by gas, concludes Dr. Bayley, is a very real one in many houses. In the discussion following the above paper, Dr. Samuel Lloyd described the symptoms observed by him in a female school teacher who was living in a room where leakage of gas took place. She suffered from severe headache, saw "flashes of light" before her eyes, had an intensely tired feeling, and became very anæmic. Other people who had lived in the same house and had suffered similarly were told that it was due to malaria, but the true cause was ascertained, and on removal from the poisonous atmosphere the patient rapidly recovered. A second case was cited by Dr. Lloyd of a male patient who developed signs of anæmia with albuminuria and enlargement of the spleen, the illness being due to the same cause. In this case also rapid recovery followed change of residence. Mr. Percy Stewart, Commissioner of Public Buildings in New York, said that public buildings, such as theatres, churches, and meeting-houses, required particular attention to obviate the dangers of leakage of gas.

[1] THE LANCET, Sept. 22nd, 1900, p. 889, annotation on the Cerebral Symptoms of Poisoning by Gas.

A FESTIVAL dinner in aid of the funds of the Royal Westminster Ophthalmic Hospital, King William-street, Strand, W.C., will be held on Tuesday, Nov. 4th, at the Hotel Cecil. The chair will be taken by Colonel Clifford Probyn, Mayor of the City of Westminster, who is sending out letters appealing for support for the hospital to recoup the necessary expenditure entailed in modernising the building. This was done last year at an approximate cost of £10,000, and a considerable part of this sum was raised by a loan from the bankers, the interest on which presses heavily upon the slender income of the hospital. The Mayor of Westminster adds that donations will be greatly appreciated by him and will enable the committee to continue its beneficial work amongst the afflicted in Westminster and elsewhere.

A COMPLIMENTARY dinner to Sir William Macewen, Regius professor of surgery in the University of Glasgow, will be held in the Windsor Hotel, Glasgow, on the evening of Friday, Oct. 31st, at 6.45. Medical men desiring to take part may obtain tickets for the dinner at 21*s.* each, including wines, by applying to one of the honorary secretaries to the dinner committee, Dr. A. Freeland Fergus, 22, Blythswood-square, Glasgow, and Dr. J. Hogarth Pringle, 172, Bath-street, Glasgow.

Dr. Ernest W. White, resident physician and superintendent of the City of London Asylum and professor of psychological medicine, King's College, London, has been elected President of the Medico-Psychological Association of Great Britain and Ireland for 1903–04.

DR. GUILLEAUME of Spa, who was the medical man in attendance on Her late Majesty Queen Marie Henriette of Belgium, has been created a Chevalier de l'Ordre de Léopold.

LITERARY INTELLIGENCE.—The memoir of her father by Mrs. Alec Tweedie, entitled, "George Harley, F.R.S., or the Life of a London Physician," is being brought out by the Scientific Press, Limited, of Southampton-street, London, W.C., in a cheaper edition.

ADDENBROOKE'S HOSPITAL, CAMBRIDGE. — On the afternoon of Oct 1st this hospital, which has about 150 beds, was the scene of an outbreak of fire caused, it is believed, by a faulty flue. The fire started in the centre of the hospital and, driven by the high wind, rapidly spread towards the Victoria Ward for females, of which it destroyed the roof and damaged the ceilings of the wards below. It was found necessary to shift some of the patients on to the lawn and to remove others to neighbouring dwellings. No patient was at all hurt, although a fireman had a bad fall. The fire brigade practically extinguished the fire in about two hours.

KING'S COLLEGE (UNIVERSITY OF LONDON).—This school of the University of London reopened on Oct. 2nd for the regular courses for both matriculated and non-matriculated students in the faculties of theology, arts, laws, science, engineering, and medicine; the advance classes for post-graduates began early in September. King's College, which was the pioneer of the evening-class movement in London, still retains this special feature, and under the new regulations of the University affords evening-class students the opportunity of preparing for degrees as internal students. In the theological faculty some adjustment of the courses has been made so as to enable students to prepare for the B.D. degree. The following free courses for teachers on Saturdays are advertised:—the Teaching of Mathematics; the Theory of Education; the Teaching of French; Practical Physics; and the Principles of Practical Physiology.

THE PHYSICAL AND MEDICAL EXAMINATION OF CANDIDATES FOR COMMISSIONS IN THE ARMY.

(FROM AN OFFICER OF THE ARMY MEDICAL SERVICE.)

As it is of the first importance that civil medical men should understand clearly the standards of physical and medical requirements of candidates for the army, seeing that in so many cases they may be consulted by parents, guardians, or tutors of schools (public or private) as to the probable fitness of candidates competing or applying for direct commissions, I have considered that perhaps a paper on the subject with observations on the various points will be not only useful but instructive. A number of civil medical men, so far as experience has taught, seem to have imperfect views of the stringency of the regulations laid down for the guidance of military medical officers in the performance of a very important duty; and it is thus that certain defects in physique, vision, or what not else, deemed of trifling significance in civil life, nevertheless render candidates disqualified for military service. It is largely owing to these imperfect views among civil medical men that one not infrequently hears of candidates for the army, or, for that matter, of officers already holding commissions, who are disqualified by defects or diseases after a military medical examination immediately presenting themselves to their civil medical advisers and obtaining certificates of fitness for service.

This is a state of affairs by no means edifying and the sooner that it ceases to exist the better. It has in the past done much harm and will, if it continues, inevitably do more in the future. It is true that medical men differ, but the question may well be asked whether civil medical men should differ on points so clearly laid down for the instruction of their military medical brethren. All will allow that once standards of fitness are fixed by constituted authority the fewer divergences from these standards the better. A certain amount of power and judgment is permitted to the army surgeon as to how he should act in slight and immaterial deficiencies in growing lads, but he has no power to cast aside material defects. To proceed then. Up to July 1st, 1901, there was, in respect of physical equivalents the following standard, and it was stated that the correlation of age, height, weight, and chest girth should be "*equal or superior*" to that given in the subjoined table:—

Age last birthday.	Height without shoes.	Weight without clothes.	Chest girth.
16 years.	64 inches.	120 lb.	33 inches.
17 ,,	64½ ,,	125 ,,	33 ,,
18 ,,	65 ,,	130 ,,	33 ,,
19 ,,	65 ,,	132 ,,	33 ,,
20 ,,	65 ,,	135 ,,	33½ ,,
21 ,,	65 ,,	138 ,,	34 ,,
22 ,,	65 ,,	140 ,,	34 ,,

It will be noticed that in this table there is no "range of expansion" in the chest or a graduated scale of inches in height at the different ages—e.g., a boy at 16 years of age, whether he be 64 inches in height or from 68 to 72 inches, is required to have the same chest girth—viz., 33 inches—and so on for other ages. All this has now been rectified, as will hereafter be shown.

Previously to the new regulations for physical and medical standards being brought into force (July 1st, 1901) a committee had been appointed to inquire into the regulations under which candidates for admission into the army (as well as recruits) were physically examined. That committee had before it data obtained from almost every available source. It examined statistics collected by Aitkin, Beddoe, Cowell, and Roberts relating to measurements of natives of Great Britain, and it also had before it anthropometric tables compiled by Gould, Baxter, and Bowditch in America, by Angerstein and Ranke in Germany, by Quetelet in Belgium, by Pagliani in Italy, and by Chassagnac and Boudin in France. Besides all this, measurements were procured of the boys at the Royal Hibernian Military School, the Royal Military (Duke of York's) School at Chelsea, and the results of the medical examination of Woolwich, university, Sandhurst, and militia candidates for commissions in the army during 1899. Further, collated records of measurements of several thousand university students taken at the Cambridge anthropometric laboratory and of boys at three large schools came under the notice of the committee. As the results of the investigations by the members of that committee the subjoined table of physical equivalents received the sanction of the War Office and, as has already been stated, it became law in July, 1901.

PHYSICAL EQUIVALENTS.

Age last birthday.	Height without shoes.	Chest.	
		Girth when fully expanded.	Range of expansion.
Years.	Inches.	Inches.	Inches.
16	60 and under 62	33	2
	62 ,, 65	34	2
	65 ,, 68	34	2
	68 ,, 72	34½	2½
	72 and upwards.	35	2½
17	62 and under 65	34	2
	65 ,, 68	34½	2
	68 ,, 72	35	2
	72 and upwards.	35½	2½
18	62 and under 65	34½	2
	65 ,, 68	35	2
	68 ,, 72	35½	2
	72 and upwards.	36	2½
19	62½ and under 65	35	2
	65 ,, 68	35	2
	68 ,, 70	35½	2
	70 ,, 72	36	2
	72 and upwards.	36½	2½
20	62½ and under 65	35	2
	65 ,, 68	35	2
	68 ,, 70	35½	2
	70 ,, 72	36	2½
	72 and upwards.	36½	2½
21	62½ and under 65	35	2
	65 ,, 68	35½	2
	68 ,, 70	36	2
	70 ,, 72	36½	2½
	72 and upwards.	37	2½
22 and 23	62½ and under 65	35	2
	65 ,, 68	35½	2
	68 ,, 70	36	2
	70 ,, 72	36½	2½
	72 and upwards.	37	2½

In studying this table it must be noted that the correlation of age, height, and chest girth should be "*equal* or *superior*" to that which is given; or, in other words, the table shows the "*irreducible minimum*" which should be required in cases of candidates for military service.

It has already been stated that a certain amount of discretion is allowed to the army surgeon; this he exercises freely and equably as between the candidate and the State in cases where lads at the specified ages do not come up to the standard fixed as to chest girth, knowing that a growing lad of fair physique is likely to develop, and it has been proved that in a majority of cases he does so develop. However, candidates accepted on the recommendation of a military medical examining board who may thus be slightly under the standard chest girth are only admitted to the Royal Military Academy at Woolwich and the Royal Military College at Sandhurst on the understanding that they should have reached the standard required according to their ages before receiving commissions. Where a candidate falls so far short as three inches of the standard it is a doubtful point and depends largely on circumstances whether a recommendation for his acceptance would be made. In reference to

the measurement for height little need be said, for it should be taken under a proper standard with the feet together and the weight thrown on the heel and the body erect without rigidity, the vertex of the head being level under the bar. In respect of the chest measurement particulars are necessary. The instructions are as follows: the lad to be examined is made to stand with his feet together and to raise the hands above the head. The tape is to be carefully adjusted round the chest, with its posterior upper edge touching the inferior angles of the scapulæ and its anterior lower edge the upper part of the nipples. The arms are then to be lowered to hang loosely by the side and care is to be taken that the shoulders are not thrown upwards or backwards so as to displace the tape. The lad is then to empty his chest by continuous whistling as long as sound can be produced, the tape being gathered in during the process, and when the minimum is reached it is noted. He is then directed to inflate the chest to its utmost capacity; the maximum measurement is then noted. The range of expansion is, of course, the difference between the maximum and minimum measurements. The need for going into this matter particularly is that different methods of making chest measurements cause very different records and may materially affect the prospects of candidates.

As to weight nothing further need be said than that it is to be taken with the subject nude. Weight is not now of such importance as it was under the old system.

THE MEDICAL EXAMINATION.

The medical examination under the new regulations is conducted in the same way as it was under the old system. It is invariably carried out by a board of experienced army medical officers, the president being detailed by the Director-General. As a rule the military medical officers in charge of the Royal Academy at Woolwich and the Royal Military College at Sandhurst are members. It is specifically stated in the regulations that in the selection of members of this board "due regard should be given to their possession of *special qualifications* for the duty." Thus, then, it will be seen that the medical examination is conducted by competent officers.

I now proceed to the points falling in succession to the medical board.

(*a*) The first in importance is *vision*—a not inconsiderable number of candidates fail in this respect. The standard prescribed is as follows:—

1. If a candidate can read D. = 6 at six metres (20 English feet) and D. = 0·6 at any distance selected by himself, with each eye without glasses, he will be considered *fit*.

2. If a candidate can only read D. = 24 at six metres (20 English feet) with each eye without glasses, his visual deficiency being due to faulty refraction which can be corrected by glasses which enable him to read D. = 6 at six metres (20 English feet) with one eye, and D. = 12, at the same distance with the other eye, and can also read D. = 0·8 with each eye without glasses, at any distance selected by himself, he will be considered *fit*.

3. If a candidate cannot read D. = 24 at six metres (20 English feet) with each eye without glasses, notwithstanding he can read D. = 0·6, he will be considered *unfit*.

Normal vision of one eye may be sufficient to allow a higher defect in the other, to the extent of one-sixth, if the defect is simple error in refraction remedied by glasses.

The candidate must be able to read the tests without hesitation in ordinary daylight.

(N.B.—Snellen's test types will be used for determining the acuteness of vision.)

Squint, inability to distinguish the principal colours, or any morbid conditions, subject to the risk of aggravation or recurrence in either eye, will cause the rejection of a candidate.

For the examination of the eyesight a special army medical officer of considerable experience in this particular subject, and who has made a special study of it, is detailed, so there can be no question of his fitness for the expert duty committed to him. In comparing the sight test of the new regulations with that of the old the two short paragraphs after (3) have been added to the former, and it should be carefully noted that the candidate "must be able to read the tests *without hesitation in ordinary daylight*." Notwithstanding this candidates who are rejected fail to read the type (D. = 24) with the naked eye, even with the aid of artificial light, and this when the authorities have allowed only *one-fourth of normal vision*. Yet such candidates present themselves with all manner of certificates from ophthalmic surgeons, hoping that these will get them through the vision test. Here is a standard, and a generous standard, of eyesight which a not inconsiderable number of candidates do not attain, and it is only raising vain hopes to furnish these with qualifying certificates.[1] The civil ophthalmic surgeon certifying may examine a candidate under far more advantageous conditions than he receives at the Army Medical Examination Hall and may thus be justified in giving an opinion contrary to that of the military expert ophthalmic surgeon; but the civil ophthalmic surgeon must note the definite conditions laid down by the military authorities and see that the lad consulting him is placed under these on examination before committing himself to an opinion directly antagonistic to that of a military medical officer. Cases of colour-blindness do occasionally occur, but they are by no means as frequent as the cases of defective vision. The principal colours are green and red.

(*b*) *Hearing.*—Cases of complete or partial deafness are extremely rare.

(*c*) *Speech impediment.*—Stammering is now and again met with, but rarely. In a slight form it would scarcely be a cause of rejection; but if at all severe or marked would inevitably cause the rejection of the candidate. It should be made a rule by any civil medical man whose advice is sought for a case of stammering in a lad who proposes competing for the army to point out the necessity for special treatment before presenting himself for examination. Such special treatment has proved so successful in some cases brought under notice that a candidate rejected on the ground of severe stammering has after undergoing a course been so markedly benefited as to have subsequently passed on representing himself.

(*d*) *Teeth.*—Loss or decay of 10 teeth is by regulation a disqualification. Decayed teeth, if well filled, will be considered sound. Under this heading comes the point of artificial teeth. Plates with artificial teeth, if the replacement of lost teeth does not exceed 10, have not been considered a cause of rejection unless associated with other conditions pointing to constitutional debility.

(*e*) *The chest and its organs.*—This heading is of great importance. The instructions to army medical officers under it are to observe that the chest is "*well-formed*" and that "the lungs and hearts *are sound*," and yet lads with deformities (e.g., pigeon breast) of the chest have come up twice for examination and in each case been rejected. True, the boy's physique may be good and his muscular development satisfactory, aye, he may be even an athlete; but the question to be answered is this, Should such a lad be passed as "fit" by a military medical board? Is the chest of such a lad "well formed"? and if not "well formed" how can he be fit? and yet to the civilian medical mind the rejection of such a case might present itself as a great hardship to the lad and as not interfering with the lad's capability of earning a livelihood in civil life.

In reference to the lungs and heart being sound certain questions arise. How far do functional bruits disqualify? When found are they likely to improve by the drill and gymnastics and study that a lad has to go through at Woolwich and Sandhurst? The army can get candidates without functional bruits, is it then right for the army surgeon to accept lads who are suffering from these? In some cases these functional murmurs are not sufficient to cause rejection by military examining boards, but the questions above are worthy of consideration. Of course, organic bruits must disqualify. In short, a further plain question is this: Is a heart with a functional murmur "sound"? Many references have arisen and antagonistic views by civil and military medical men been expressed on heart affections not only in respect of candidates but of commissioned officers. Many an officer, or for that matter a candidate, suffering from organic disease has on rejection for the army obtained a certificate of fitness from a civil medical man, often a physician of eminence, and has made all the use he could of it. Heart disease, it should be clearly stated, is

[1] The committee's report on the vision test says: The test imposed by the order of August, 1899, is the reading of Snellen's D. 24 at 20 feet. Failure to do this with either eye disqualifies. By experiment we find that this test can be fulfilled by a person who is myopic to the extent of 1·75 D. Such a person cannot distinguish the individuals in a group of men standing against a dark background at a distance of 70 yards, nor can he see a man standing against a clear background at a distance of 500 yards. For any branch of the service requiring a long range vision this is certainly a limit below which no one should be admitted. It should, however, be added that simple myopia of this amount can be corrected by appropriate glasses and that while it does not improve with advancing age it does not necessarily increase, at least, as far as distant vision is concerned. If lenses be permitted this degree of short-sightedness need not interfere with the discharge of ordinary military duty. For any branch of the service requiring distinct vision at long ranges and accurate judging of distances it is worth considering whether this minimum is not too low.

rightly considered a disqualification for military service, which at any moment might become active service or service in a trying climate under trying conditions. These remarks do not apply in civil life, so that the standards for military and civil life cannot be compared.

(*f*) *Hernia.*—Single or double hernia is a clear disqualification, but if successfully operated on, leaving no tendency whatever to recurrence, will not be considered a cause of unfitness.

(*g*) *Hydrocele, varicocele, and varicose veins.*—Hydrocele when it exists would cause rejection until operated on successfully, and the same may be said of varicocele and varicose veins in an aggravated or marked form; it is therefore unnecessary to suggest that where such cases come under the notice of civil medical men immediate operation should be advised to the candidate or his parents before a lad proceeds to his military medical examination. Lads who have successfully passed the literary examination are constantly being put back as "temporarily unfit" for the defects noted and recommended provisionally only "if successfully operated on."

(*h*) *Formation and development of limbs.*—These are almost altogether natural. Few, if any, candidates are rejected on the grounds of malformation or imperfect development of the limbs.

(*i*) *Free and perfect motion of the joints.*—Under this head the remarks under (*h*) apply.

(*j*) *Formation of feet and toes.*—A not inconsiderable number of candidates have "hammer toes" or overlapping toes. "Hammer toes" would decidedly cause rejection. In most of these cases corns exist and the combination of "hammer toes" and corns is scarcely consistent with efficient marching for long distances. Trifling operations would remedy some of the slight malformations seen in candidates and civil medical men would do wisely to advise such operations when candidates for the army consult them.

(*k*) *Skin diseases.*—Cutaneous eruptions occasionally cause rejection; the chief are acne in a severe form, eczema, and psoriasis. No candidate is likely to be passed as fit who may be suffering from any of these skin diseases, so that treatment should be taken in hand by the medical adviser before the candidate is allowed to go up before a military medical board.

(*l*) *Congenital malformations or defects.*—Under this heading trouble has arisen from candidates who have been rejected on the grounds of curvature of the spine immediately being taken by their parents to eminent specialists and obtaining certificates from these as to their fitness for the army. Whatever a lad with curvature of the spine may be able to do in civil life it would be wrong to accept him for military service when the military medical officer is instructed to observe that there is no "malformation." The army can get lads without spinal curvature. Why, then, should it accept boys with curvatures, even although eminent surgeons in civil practice consider them fit!

(*m*) Finally, the military medical officers are called on to see that the candidate does not bear traces of previous acute or chronic disease pointing to an impaired constitution and to note whether he is of pure European descent.

One subject must not be here omitted, and this is undescended testicle or loss of that organ. An undescended testicle, if the gland be retained in the inguinal canal, will disqualify. If the gland be retained in the abdomen the case should be regarded with suspicion but in itself such retention need not disqualify a candidate otherwise eligible.

If the foregoing attempt to bring before the profession in civil life in a clear light the various important points in the physical and medical examination of candidates for the army shall result in lessening differences of opinion between them and military medical officers as to the fitness of candidates for commissions I shall have been sufficiently rewarded for writing this paper. A great responsibility is thrown on army medical officers and the more support they obtain from their brethren in civil life in carrying out with thoroughness an important public duty the better for all parties. Up to the present most painful and unsatisfactory results have followed on differences of opinion which should be reduced to a minimum when standards of fitness are authoritatively fixed.

THE WATER-SUPPLY OF PENZANCE.—The Penzance town council has received the sanction of the Local Government Board to borrow £6000 for works of water-supply.

MEDICAL SCHOOL DINNERS.

London Hospital.—The 118th session of the London Hospital Medical College was opened on Wednesday, Oct. 1st, with the usual old students' dinner which was held in the large library of the college, Mr. E. Hurry Fenwick being in the chair. No fewer than 176 old students and guests sat down to dinner, this being a record number. Among those present were Sir Frederick Treves, the Hon. Sydney Holland (chairman of the hospital), Mr. W. Douro Hoare (chairman of the college board), Mr. Jonathan Hutchinson, F.R.S., Mr. Marlborough Pryor, and others. The chairman, in proposing the toast of "The Hospital," spoke of the great improvements that had lately been carried out and also of the high honours that had fallen to the hospital during the past year, particularly the honours conferred upon Sir Frederick Treves. After the anxious experience of the country in June last it was scarcely necessary to remind all those present of the enormous services rendered to His Majesty the King and to the country in general by Sir Frederick Treves. The result of the treatment was awaited with breathless anxiety by the whole world and had been hailed with the greatest joy throughout the universe. Sir Frederick Treves, in acknowledging the way in which his health had been drunk by those present, stated that great as had been the praise bestowed upon him and high as were the honours that it had pleased His Majesty to confer upon him he felt that he owed everything to his training at the London Hospital. He rejoiced extremely that the honours brought to the London Hospital were by no means limited to himself, for the anæsthetist who assisted him was the anæsthetist at the London Hospital and the nurses who carried out his directions were London Hospital nurses. The Hon. Sydney Holland, in replying for the hospital, said that he and his colleagues on the house committee had done their very best to bring the hospital and college up to date and were determined to maintain both the hospital and college in the highest state of efficiency possible. He said that although his connexion with the London Hospital had been nothing like so long as that of Sir Frederick Treves and of so many of those present, he could call attention to enormous strides which had been made in the last few years. Among others he mentioned the isolation block now completed at a cost of £30,000, which had been given by a friend of Sir Frederick Treves; the post-mortem department with the pathological institute attached, built at a cost of £20,000; the new operating-theatres, built at a cost of £113,000; new children's wards and a sterilising department; a new out-patient department, which would be opened in two weeks, erected at a cost of £70,000; and a new convalescent home, built at a cost of £12,000. Mr. Holland concluded by pointing out the great size of the London Hospital in comparison with most of the other metropolitan general hospitals and by thanking all, especially their Majesties the King and Queen, for much generous support. The Queen, he said, had asked to be patron of the hospital and she had installed the Finsen light treatment of lupus at her own cost and every day brought forth further evidence of the great interest which was taken in that hospital by the Royal Family. Mr. C. W. Mansell Moullin returned thanks for the guests, after which Mr. J. Hutchinson remarked on the alterations that had taken place in the hospital since he himself held a place on the active staff.

Middlesex Hospital.—The annual gathering of the past and present students of the Middlesex Hospital took place on Oct. 1st in the Empire Hall of the Trocadéro Restaurant. Dr. William Cayley, senior consulting physician to the hospital, occupied the chair, and those present numbered 148. The Royal toasts having been proposed by the chairman and duly honoured, that of "The Services" was next given and was responded to by Major M. W. Russell, R.A.M.C., who referred with gratification to the constant stream of Old Middlesex men into the various branches and expressed the hope that no break would occur in its continuity. Dr. William Duncan, a major in the Middlesex Yeomanry, responded for the Auxiliary Forces, pointing out the advantages afforded by a training in a cavalry regiment and the practical manner in which the force had proved its value in the recent war. The chairman then proposed the toast of the evening,

"The Prosperity of the Middlesex Hospital and its Medical School," referring to his own long and happy association with the institution. He mentioned the many and useful improvements which had been effected, especially in recent years, extending both the scope and efficiency of its work, the last, but not the least important from a scientific point of view, being the elaboration and complete organisation of the several departments for cancer and clinical research and the application of the modern developments of electricity. Lord Sandhurst, G.C.S.I., Vice-President of the hospital and chairman of the weekly board, replied, expressing his approval of the continued progress in the affairs of the hospital under the able and genial guidance of Sir Ralph Thompson, K.C.B., during the period of his absence as Governor of Bombay, when his own hospital experience had been of inestimable value to him in confronting the plague, cholera, and famine which he found prevailing there on his accession to office and which had happily been successfully combated with the assistance of many of those old Middlesex men whom he had previously known in the familiar precincts. Mr. John Murray replied on behalf of the medical school, indicating how satisfactorily the thoroughness of the teaching and the completeness of the *matériel* and equipment were attested by the immediate results achieved by students. Sir Richard Douglas Powell then proposed "The Health and Prosperity of the Past and Present Students," referring among others to his former house physicians who had distinguished themselves on the staff of the hospital, in the services, and the counties. Dr. Cooper Rose and Dr. Rees Phillips responded for the past and present students respectively. The toast of "The Visitors" was given by Mr. Stephen Paget, the lecturer of the day, and was acknowledged by Mr. E. Letchworth, grand secretary of English Freemasons, and by Chevalier Wilhelm Ganz who, as for many years past, had kindly arranged the musical programme. The health of "The Chairman" was proposed by Dr. J. Kingston Fowler, senior physician, whose words were received with the greatest enthusiasm, and replied to by Dr. Cayley in a short speech. In the intervals of the toasts Mr. Gregory Hast and Mr. Franklin Clive gave excellent renderings of favourite songs, accompanied by Mr. Wilhelm Ganz.

St. George's Hospital.—The annual dinner was held at the Whitehall Rooms of the Hôtel Métropole on Oct. 1st, Sir William Bennett being in the chair. Over 150 past and present members of the school or of the board of the hospital attended and a most successful evening resulted. The dean of the school (Sir Isambard Owen), in replying to the toast of the evening, "The Prosperity of St. George's Hospital Medical School," was even more than usually happy in his after-dinner oratory. He dwelt upon the great efforts necessary for an old institution like St. George's Hospital when it kept abreast of the strides made by modern medicine and surgery and the allied sciences. Such efforts were being made with conspicuous success at Hyde Park-corner, but the cost at which they were made was not sufficiently appreciated by the charitable public. Mr. Timothy Holmes, treasurer to the hospital, in like fashion alluded to reproaches cast upon the exterior of an antiquated building. The governors of St. George's had wisely preferred their hospital to be renewed and efficient within than to be merely imposing without. The latter ideal was readily attained, said Mr. Holmes, when the hoped-for benefactor presented the money. Amongst the other speakers were Lieutenant-Colonel E. N. Wilson, C.M.G., D.S.O., &c., Dr. Whipham, Mr. T. P. Pick, and Mr. Clinton Dent. It is not unusual for an optimistic tone to prevail in the speeches that follow a good and cheerful dinner. Such a feeling was obvious in most of the remarks made upon the present occasion, but the successful record upon which they were based and the numerous attendance at the dinner provided a sound foundation for confidence and augur well for the success of the school in the medical year that has just opened.

King's College Hospital.—The annual dinner of the old students of the medical department of King's College was held at the Hotel Cecil on Oct. 1st. The chair was taken by Dr. Thomas Crawford Hayes who was well supported by his colleagues, nearly all of whom were present, and by a large and representative gathering of former students. 113 sat down to the dinner, a number considerably above the average of attendances at these gatherings during the last few years. Among those present may be mentioned the Rev. A. Robertson, Principal of the College; Sir John Alexander Cockburn, K.C.M.G., a distinguished former student; and many members of the active and consulting staff. After the loyal toasts the chairman proposed "Prosperity to King's College and to King's College Hospital." He reviewed the past history of the College and mentioned distinctions recently conferred upon members of the present staff, among which was the appointment of Dr. D. Ferrier to deliver the Harveian Oration at the Royal College of Physicians of London. He quoted figures to show that students of King's College Hospital had been extremely successful of late at the various examinations and claimed that for devotion to the interests of the students the present staff could well bear comparison with its predecessors. He alluded most feelingly to the late Dr. Curnow, by whose death he himself and so many in the room had lost a true friend. In conclusion he called upon all old King's College men to work in the future for the good of their *alma mater*. The Principal of the College, in reply, detailed the improvements which had been made, and which were being made, at the College for the advancement of medical education. Sir John Cockburn, in proposing the health of the chairman, took the opportunity of paying a high tribute to the Principal who had done so much for the medical department of King's College. During the evening Mr. H. Lavies, a former student, gave an excellent rendering of some of the old King's College songs which are so well remembered by many generations of King's College men. Other songs and recitations were given by Messrs. Frossard, Reid, and Clay, whose efforts were much appreciated. Greetings were also exchanged with University College, the annual dinner of which institution was being held in the same building.

Charing Cross Hospital.—The past and present students of this hospital held their annual dinner at the Hotel Cecil on Thursday, Oct. 2nd, under the chairmanship of Dr. C. P. Oliver. The guest of the evening was Professor W. H. Welch of the Johns Hopkins University, Baltimore, U.S.A., and Mr. Stanley Boyd, in proposing the health of "The Visitors," said that in choosing Professor Welch to be the fourth Huxley lecturer it was intended to emphasise their desire to do what was possible to strengthen the union between England and America. Professor Welch, in reply, said that the invitation which he had received to become the fourth Huxley lecturer had been appreciated by all his professional colleagues in America as an expression of the desire to do honour to American medicine. They felt that it was an honour to American medicine and that it would strengthen the bonds of amity between the two nations. The necessity for the union existed and such manifestations of its existence were most useful, wholesome, and beneficial. All work in medical science should have for its aim a relation to the cure and prevention of disease, and that had guided American work in medical science as it had English work. In the course of some remarks upon medical education in America, Professor Welch said that though he recognised fully the great advantages and value of laboratory teaching he thought that there was a possibility of carrying that to an extreme. He considered that clinical teaching in America was not quite up to the standard of the teaching in the laboratory—there was a danger of loss of perspective on the part of the student. The proceedings concluded with a vote of thanks to the chairman, proposed by Sir William Taylor, Director-General of the Army Medical Service, which was suitably acknowledged.

Westminster Hospital.—The annual dinner of the students, past and present, was held on Friday, Oct. 3rd, at the Empire Rooms, Trocadéro Restaurant. The chairman, Dr. T. Colcott Fox, was supported by most of the hospital staff, the company numbering nearly 100. In proposing the health of "The King" the chairman referred to His Majesty's serious illness and the coronation and the interest which His Majesty took in the hospitals of the country. After the toasts of "The King" and "The Queen and Royal Family" had been duly honoured the chairman, in a few fitting words, proposed "The Students, Past and Present," which was responded to by Dr. F. R. P. Taylor, medical superintendent of the Darenth Asylum, and by Mr. H. J. Hebb, who alluded to the "all-round" improvement in sports at the hospital and particularly commented on the hospital having regained the Inter-Hospital Swimming Shield this year. Dr. Lazarus-Barlow proposed "The Medical School" and referred to his own severe illness at the hospital and the unceasing care and untiring energy of those members of the surgical, medical, and nursing staff who had looked after him and the constant sympathy of the

students and all connected with the institution, concluding by adding that "a school where the heart of teachers and taught beat so true, as I have proved it to do, has within it one, at any rate, of the fundamental elements of success." Dr. A. M. Gossage, the Dean, in replying, spoke of the continued success of the students in examinations and stated that the entry of students had been steadily increasing during the past few years and that in all probability this year's number would eclipse that of last. The chairman's health was proposed by Dr. W Rivers Pollock.

University College Hospital.—The annual dinner of the old and present students of the Medical Faculty of University College Hospital took place at the Hotel Cecil on Oct. 1st and was largely attended. The toast of the evening, "Success to the Medical School and University College Hospital," was proposed by the chairman, Mr. Rushton Parker, professor of surgery in University College, Liverpool, and responded to by Dr. J. Rose Bradford. The chairman's health was proposed by Dr. G. Vivian Poore, one of his fellow students at University College. Music was provided by Dr. Frederick Roberts, Dr. C. E. Beevor, Dr. P. D. Turner, Mr. J. H. Timothy, and Mr. E. E. Isaac.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8197 births and 4859 deaths were registered during the week ending Oct. 4th. The annual rate of mortality in these towns, which had been 17·7 and 17·5 per 1000 in the two preceding weeks, further declined last week to 17·0 per 1000. In London the death-rate was 15·7 per 1000, while it averaged 17·5 in the 75 other large towns. The lowest death-rates in these towns were 4·8 in Hornsey, 7·1 in Leyton, 9·3 in Bournemouth, 9·4 in Handsworth and in King's Norton, 9·8 in Walthamstow, 10·5 in East Ham, and 10·9 in Wolverhampton; the highest rates were 22·1 in Stockport and in Liverpool, 22·7 in West Ham, 22·9 in West Bromwich and in Wigan, 23·6 in Sunderland, 25·0 in Hanley, and 26·6 in Merthyr Tydfil. The 4859 deaths in these towns last week included 907 which were referred to the principal infectious diseases, against 1183 and 999 in the two preceding weeks; of these 907 deaths 550 resulted from diarrhœa, 92 from measles, 86 from whooping-cough, 72 from "fever" (principally enteric), 64 from diphtheria, 42 from scarlet fever, and one from small-pox. No death from any of these diseases was registered last week in Devonport, Burton-on-Trent, Handsworth, Barrow-in-Furness, or Halifax; while they caused the highest death-rates in West Ham, Norwich, Hanley, West Bromwich, Aston Manor, Wigan, Preston, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Bristol, Hanley, Bootle, Bury, Stockton-on-Tees, and Cardiff; from scarlet fever in West Bromwich and Bolton; from diphtheria in Bournemouth; from whooping-cough in Northampton, Norwich, Hanley, Wigan, South Shields, and Cardiff; from "fever" in Ipswich and Oldham; and from diarrhœa in West Ham, East Ham, Portsmouth, Aston Manor, Wigan, Preston, and Merthyr Tydfil. One death from small-pox was registered in West Ham, but not one in any other of the 76 large towns. The Metropolitan Asylums hospitals contained 34 small-pox patients on Saturday, Oct. 4th, against 71, 47, and 42 on the three preceding Saturdays; four new cases were admitted during last week and in each of the two preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 2669, 2657, and 2703 at the end of the three preceding weeks, had further risen to 2749 at the end of last week; 366 new cases were admitted during the week, against 311, 309, and 378 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 134, 139, and 148 in the three preceding weeks, further rose to 167 last week, but were 37 below the corrected average number. The causes of 50, or 1·0 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Bristol, Nottingham, Salford, Bradford, Hull, Newcastle-on-Tyne, and in 50 other smaller towns; the largest proportions of uncertified deaths were registered in Portsmouth, Liverpool, St. Helens, Rochdale, Preston, Middlesbrough, and Sunderland.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 14·1 and 15·7 per 1000 in the two preceding weeks, further rose to 16·6 per 1000 during the week ending Oct. 4th, but was 0·4 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 11·2 in Leith and 12·2 in Aberdeen, to 17·3 in Paisley and 18·5 in Glasgow. The 536 deaths in these towns included 31 which resulted from diarrhœa, eight from whooping-cough, six from scarlet fever, six from "fever," four from diphtheria, and one from measles, but not any from small-pox. In all, 56 deaths were referred to these principal infectious diseases last week, against 46 and 48 in the two preceding weeks. These 56 deaths were equal to an annual rate of 1·7 per 1000, which was 1·5 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 21 and 27 in the two preceding weeks, further rose last week to 31, of which 16 occurred in Glasgow, four in Edinburgh, four in Aberdeen, three in Dundee, two in Paisley, and two in Greenock. The deaths from whooping-cough, which had been 10 and seven in the two preceding weeks, rose again to eight last week, and included five in Glasgow and two in Edinburgh. The fatal cases of scarlet fever, which had been two and five in the two preceding weeks, further increased last week to six, of which two were registered in Glasgow. The deaths referred to different forms of "fever," which had been four, four, and six in the three preceding weeks, were again six last week, and included three in Glasgow and two in Edinburgh. The fatal cases of diphtheria, which had been three and two in the two preceding weeks, rose again last week to four, of which two occurred in Edinburgh. The deaths referred to diseases of the respiratory organs in these towns, which had been 57 and 86 in the two preceding weeks, further rose last week to 87, and were 10 in excess of the number in the corresponding period of last year. The causes of 29, or nearly 6 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 19·1, 22·3, and 28·3 per 1000 in the three preceding weeks, declined again last week to 22·7 per 1000. During the past four weeks the death-rate has averaged 23·1 per 1000, the rates during the same period being 16·7 in London and 14·7 in Edinburgh. The 165 deaths of persons belonging to Dublin showed a decline of 41 from the number in the preceding week, and included 38 which were referred to the principal infectious diseases, against 41 and 45 in the two preceding weeks; of these, 18 resulted from diarrhœa, eight from measles, six from "fever," five from diphtheria, and one from whooping-cough, but not one from either small-pox or scarlet fever. These 38 deaths were equal to an annual rate of 5·2 per 1000, the death-rates from the same diseases last week being 2·7 in London and 1·8 in Edinburgh. The fatal cases of diarrhœa, which had been 20 and 19 in the two preceding weeks, further declined last week to 18. The deaths from measles last week numbered eight, against 13 and 10 in the two preceding weeks. The six fatal cases of "fever" showed a decline of two from the number in the preceding week, while the five deaths from diphtheria were slightly in excess. The 165 deaths in Dublin last week included 46 of children under one year of age and 21 of persons aged upwards of 60 years; the deaths both of infants and of elderly persons were considerably fewer than in the preceding week. Six inquest cases and three deaths from violence were registered; and 60, or more than one-third, of the deaths occurred in public institutions. The causes of eight, or nearly 5 per cent., of the deaths in Dublin last week were not certified.

THE directors of the National Provident Assurance Institution have appointed Dr. Raymond Crawfurd medical officer to the institution, to act with Dr. T. Henry Green in succession to Mr. John Croft who has retired.

Looking Back.

FROM

THE LANCET, *SATURDAY, OCTOBER 9*, 1824.

ADVERTISEMENT.

AT the commencement of a new medical year, the usual courtesy observed in periodical publications requires that we should preface the Fifth Volume of THE LANCET with some preliminary observations; but the great exertions which we have this week made for the gratification and instruction of our Readers leave us very little space for a compliance with this ceremonial. The appeal to public *patronage*, which is commonly made on such occasions, is a species of cant which we disclaim; for we know that active and independent literary exertion must be followed by a corresponding demand for any work on which it may be employed. From the commencement of our labours, we have relied only on a zealous, vigilant, and uncompromising discharge of our duty, as Medical Journalists; and the extent of our circulation affords the strongest proof that the pledges which we gave to the Public have been fully redeemed.[1]

FOREIGN DEPARTMENT.

ANALYSIS OF FOREIGN MEDICAL JOURNALS.

ARCHIVES GENERALES.—AUG.

Pollenine.

Doctor JOHN has lately discovered in flour, a substance which may be ranked between gluten and albumen, to which he has given the name *pollenine*. This substance is yellow, insipid, inodorous, and insoluble in water, alcohol, ether, or the volatile oils. It burns with a flame. Exposed to the air, it soon imbibes the odour and the taste of cheese, and gives out a disengagement of ammonia.

MIDDLESEX HOSPITAL.

Monthly return, Sept. 1 to 30 inclusive.

In-patients admitted by letter	92	132
Do. accidents	30	
Out-patients admitted by letter	144	259
Do. accidents	115	
In-patients discharged	118	
Remaining in the hospital	192	

THE SERVICES.

THE WAR INQUIRY.

THE Royal Commission of inquiry into the late war in South Africa has commenced its proceedings. It has been decided that the inquiry is to be held in private, the secretary of the Commission preparing and communicating to the press and the public a brief statement of the results of the proceedings. In the circumstances this seems to be a wise and judicious course to adopt. We can only hope and suppose that the Commission will include among its subjects of inquiry the state of the medical service at the time and the preparations and arrangements that were made for the war.

ROYAL NAVY MEDICAL SERVICE.

The following appointments are notified:—Staff Surgeon D'Arcy Harvey to the *Duke of Wellington*. Surgeon J. C. G. Reed to the *Medea*.

IMPERIAL YEOMANRY (IN SOUTH AFRICA).

36th Battalion: Temporary Captain F. W. Moir, M.B., M.S. Aberd., Medical Officer, relinquishes his commission. Dated Sept. 28th, 1902.

ROYAL ARMY MEDICAL CORPS.

Major R. S. F. Henderson is appointed to the medical charge of the Station Hospital, Deesa. Lieutenant R. LeG. Worsley, R.A.M.C. (Militia), assumes medical charge of women and children, Wellington Lines and Aldershot town. Major W. H. Pinches proceeds to the Home District for duty. Lieutenant-Colonel W. Dugdale is posted to the Poona district, and appointed to the medical charge of the Station Hospital, Ahmednagar.

Lieutenant-Colonel H. Charlesworth, C.M.G., retires on retired pay. Dated Oct. 4th, 1902. Lieutenant-Colonel F. T. Wilkinson retires on retired pay. Dated Oct. 4th, 1902.

The undermentioned Majors to be Lieutenant-Colonels (dated July 29th, 1902):—S. Westcott, C.M.G., B. M. Skinner, C. R. Bartlett, J. D. T. Reckitt, R. Kirkpatrick, C.M.G., H. S. McGill, A. A. Pechell, C. R. Tyrrell, J. Hickman, W. B. Thomson, and H. E. Deane. Major M. Kelly retires on retired pay. Dated Oct. 4th, 1902.

Temporary Captain M. Taylor (Volunteers), on relinquishing his temporary commission for service in South Africa, is granted the honorary rank or Captain in the Army with permission to wear the uniform of the corps. Dated Sept. 20th, 1902.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain W. Nettle to be Surgeon-Major. Dated Oct. 8th, 1902. Surgeon-Captain George Gardner Oakley, 1st Volunteer Battalion West Riding Regiment, to be Surgeon-Captain. Dated Oct. 8th, 1902.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Ayrshire and Galloway: Surgeon-Major R. Allan to be Surgeon-Lieutenant-Colonel. Dated Oct. 4th, 1902. *Rifle:* 5th (the Hay Tor) Volunteer Battalion the Devonshire Regiment: Surgeon-Captain J. L. Cuppaidge resigns his commission. Dated Oct. 4th, 1902. 4th Volunteer Battalion the South Wales Borderers: Surgeon-Major S. B. Mason to be Surgeon-Lieutenant-Colonel. Dated Oct. 4th, 1902. 7th (Clackmannan and Kinross) Volunteer Battalion Princess Louise's (Argyll and Sutherland Highlanders); Surgeon Major D. W. Currie to be Surgeon-Lieutenant-Colonel (dated Oct. 4th, 1902); Surgeon-Captain D. R. Oswald to be Surgeon-Major (dated Oct. 4th, 1902.

DEATHS IN THE SERVICES.

Lieutenant-Colonel Nathaniel M'Creery, A.M.S. (retired), suddenly, at Newpark, Kilkenny, aged 52 years. He joined the service in 1874, and served with the Nile expedition in 1884–85 (medal with clasp and Khedive's star), with the Soudan Frontier Field Force in 1885–86, and in the operations near Suakin in December, 1888, including the engagement at Gemaizah. (Mentioned in despatches; third class of the Medjidie and clasp.)

MILITARY STATIONS FOR OCTOBER.

The following are the stations for the Royal Army Medical Corps and for the Militia Medical Staff for October:—

ROYAL ARMY MEDICAL CORPS.

1st Company	...	Aldershot.	11th Company	...	Dover.
2nd ,,	...	Aldershot.	12th ,,	...	Woolwich.
3rd ,,	...	Aldershot.	13th ,,	...	Edinburgh.
4th ,,	...	Netley.	14th ,,	...	Dublin.
5th ,,	...	Netley.	15th ,,	...	Belfast.
6th ,,	...	Portsmouth.	16th ,,	...	Cork.
7th ,,	...	Devonport.	17th ,,	...	Curragh.
8th ,,	...	York.	18th ,,	...	London.
9th ,,	...	Colchester.	19th ,,	...	Chester.
10th ,,	...	Chatham.	Depot ,,	...	Aldershot.

MILITIA MEDICAL STAFF.

South. Dist. Co.	...	Netley.	S.-Eastn. Dist. Co.	...	Aldershot.
Home Dist. Co. (late Middlesex)	...	Woolwich.	N.-Eastn. ,,	...	York.
			N.-Westn. ,,	...	Chester.
Home Dist. Co. (late Surrey)	...	Aldershot.	Dublin ,,	...	Dublin.
Eastn. Dist. Co.	...	Colchester.	Belfast ,,	...	Belfast.

LIEUTENANT-COLONEL GRANT, A.M.D.

Lieutenant-Colonel R. A. P. Grant, A.M.D., who has retired after 43 years' service in the army, served in India with the 43rd Light Infantry and proceeded with that regiment to New Zealand, taking part in the war from 1863 to 1866. He was specially mentioned in despatches for very zealous and efficient services rendered to the wounded on July 28th, 1865, in going out under a very heavy fire to the place where Captain Close, of the 43rd Regiment, was mortally wounded and directing and assisting to carry him under cover (medal). This was noticed in THE LANCET as follows:—

New Zealand has, not for the first time, given one of our brethren serving in the army an opportunity of showing that the medical

[1] Editorial observations.

[1] THE LANCET, Oct. 28th, 1865, p. 491.

officer has to face as much danger in the field, and that he will do it with as much pluck as any of his "combatant" companions. ..... We observe [in the despatch] that a bugler who remained by the body of Captain Close has been recommended for the Victoria Cross, and we trust that the claims of Assistant-Surgeon Grant may enable us at no distant date to record the addition of another laurel to the Medical Department of the army.

Colonel Grant served for 13 years with the 43rd Light Infantry, at stations abroad and in England and Ireland. In 1873 he was appointed by the Director-General to the charge of the Military Prison, Malta, which he held for five years. On his return to England he was appointed to the charge of the the Headquarter Staff at York, under the late General Sir George Willis, K.C.B., and subsequently to the charge of the Station Hospital at Edinburgh Castle. When the Cameron Barracks at Inverness were occupied in 1886 Colonel Grant was selected for the charge, and has continued ever since, a period of 16 years, his services having been retained owing to the war in South Africa.

AFFECTIONS OF THE EAR IN THE GERMAN ARMY.

In the German Army 55·2 per cent. of the disability due to affections of the ear are referable to the external parts, including the tympanum; 38·7 per cent. to the inner regions of the auditory apparatus; and the balance, 6·1 per cent., to "hardness of hearing" independent of any appreciable physical changes. Affections of the ear occur with greatest frequency in January, July, and November, the reasons assigned for their prevalence during these months being respectively cold, bathing, and the arrival of recruits. Three chief causes of ruptured tympanum are mentioned in the official reports: direct violence, diving head foremost into water, and the concussion from heavy ordnance. Amongst rarer causes there are insufflation by means of instruments, sneezing, loud speaking as in giving the word of command, fits of coughing, vomiting, thunder, and foreign bodies, such as pieces of straw, grains of wheat, insects, pointed pencils, paper spills, matches, and knitting-needles. The form of direct violence which most frequently gives rise to rupture of the tympanic membrane is boxing on the ear, but the wounds thus produced are said to heal very rapidly and without implication of the inner tracts. On the other hand, rupture from diving is often followed by inflammatory complications, cerebral or meningeal. In a recent compilation of the 13 official reports dealing with the health of the German army which have been issued during the period from 1873 to 1896 Dr. Villaret states his belief that the customary punishment by boxing on the ears seldom or never causes rupture of the tympanum in healthy and normal subjects. Whenever the accident does supervene there is nearly sure to be disease present in a chronic or latent form or else some malformation of the part which renders it peculiarly susceptible to injury. The mortality from disease of the ear is still considerable in the German army. During the period from 1873 to 1881 32 deaths were ascribed to affections of the internal ear. Operative interference seems to have been first essayed in 1881, when two cases of trephining proved fatal. In the course of the next five years, however, 13 similar operations resulted favourably. In the period from 1888 to 1896 the total number of operations for internal disease of the ear was 123, with a mortality equal to 18·7 per cent. Since 1888 the instruments required for operations on the ear have been regularly supplied to all garrison hospitals, but although the number of operations on the ear is steadily rising the invaliding is also increasing. From 1873 to 1888 the annual discharges from the service on account of disease of the ear were at the rate of 0·18 per 1000 of strength, while during the period from 1889 to 1896 they were at the rate of 0·31 per 1000. Dr. Villaret, in conclusion, recommends the adoption of the following measures: (1) prohibition of all diving head foremost; (2) a strict auricular examination of all soldiers at the beginning of the bathing season; and (3) the systematic purification of all water used for ablutionary and balneal purposes in order to insure a complete freedom from pathogenic germs.

ENTERIC FEVER IN ARMIES.

A correspondence has, as our readers are aware, been recently taking place in the columns of the *Times* in regard to this subject. It seems to have arisen out of the reported results of a commission of inquiry instituted by the American War Office into the causes of the outbreaks of enteric fever in the military camps of the United States army in 1898 and the publication of the important paper read by Major R. H. Firth, R.A.M.C., and Major W. H. Horrocks, R.A.M.C., at the late meeting of the British Medical Association. We called attention in our issue of Oct. 4th (p. 945) to the scientific merits of that paper. We need scarcely say that the question of the etiology and causation of enteric fever is too big and intricate a subject to be adequately or usefully discussed in the lay press. Dr. H. E. Leigh Canney, who has very prominently interested himself in the subject of the causes and prevention of this disease, points out in his communication to the *Times* of Oct. 6th that the prevention of enteric fever in armies is to be discussed at the meeting of the Medical Society of London on Oct. 27th. If the discussion is to lead to useful results it must be both technical and thorough and it will probably not be confined to one meeting.

"WIND SHOTS."

A communication from "F.R.C.S." in the *Times* of Oct. 7th reopens an old question which has been frequently raised by army surgeons in the past—namely, so-called "wind shots" producing fatal injuries without any apparent lesion. "F.R.C.S." is convinced that such cases, though, of course, comparatively rare, do nevertheless occur, adding that the late Sir William Mac Cormac apparently held a similar view, and asks that any instances of the sort may be put on record. The subject is discussed but differently accounted for, however, in the late Sir T. Longmore's treatise on Gunshot Injuries (1895) which is the only work available for reference at the moment. In violent explosions by gunpowder or otherwise great internal injuries may result from the explosive force with little, if any, external lesion.

THE FIRST ARMY CORPS.

An official memorandum has been issued at Aldershot regarding the organisation and distribution of the First Army Corps and First Cavalry Brigade with a view to the centralisation of command of its various component parts. From this it will be seen that among other dispositions field hospitals and bearer companies have been allotted to brigades, divisions, and corps troops, and that the First Army Corps has been modelled on the lines previously approved by the War Office. This promises to be a step in the right direction in that it will lead to the unification of the system on which the troops and medical service have to work together in the field and a training at Aldershot will thus, as far as this can be done in peace, become a practical training for war.

BARRACK-ROOM LIFE.

Without entering into the very debateable question of the merits and demerits of the cubicle system for barracks we may say that large barrack-rooms, accommodating from 30 to 40 men, if considered in regard to comfort and from a sanitary, social, and administrative or disciplinary point of view, compare unfavourably with barrack-rooms of smaller size—for 10 or 20 men, for example. It struck us that there was much common-sense in what "An ex-Squadron Sergeant-Major" urged in favour of the latter in a recent communication to the *Standard*. The present tendency is, we believe, to provide newly constructed barracks with rooms of smaller size and on the company principle.

Correspondence.

"Audi alteram partem."

THE ELECTION OF THE DIRECT REPRESENTATIVES ON THE GENERAL MEDICAL COUNCIL AND THE MEDICAL PRESS.

To the Editors of THE LANCET.

SIRS,—May I be allowed a word of criticism on a remarkable sentence in Mr. Joseph Smith's letter of thanks to his supporters[1] which seems to me to raise a very important question? "I had the whole medical press against me, including the *British Medical Journal, which, I maintain, should have remained neutral.*" (The italics are mine.) This sentence is hard on Mr. Brown and the *General Practitioner*, but what concerns me more is Mr. Smith's wish to tie the

[1] Vide THE LANCET, Oct. 4th, 1902, p. 951.

hand of the editor of the *British Medical Journal*. I am disappointed at such a feeling in Mr. Smith and I venture to hope that it does not express his permanent opinion. The freedom of the press is perhaps exaggerated, but it is certainly one of the glories of England and it will be a bad day for the medical profession if the medical press has its freedom limited. So long as editors are fair and above board, so long as they display courage and interest and full information, and a faculty of leading, and complete independence of persons and cliques, so long should they be independent and much praised for their independence. It will be another blow at the influence of the British Medical Association, in addition to that involved in the wooden and mechanical system of representation lately introduced at the instance of less than a hundred of its members, if its journal is to be silenced in discussing the claims of candidates for direct representation. Such a change, I need not say, will be still more injurious to direct representation itself which must come to grief if it and all its would-be representatives cannot bear the fullest discussion.

I am, Sirs, yours faithfully,

Highbury-place, N., Oct. 7th, 1902. J. G. GLOVER.

SOME OBSERVATIONS ON INTRAVENOUS INJECTIONS WITH A DEATH FOLLOWING THE INJECTION OF ANTI-STREPTOCOCCIC SERUM.

To the Editors of THE LANCET.

SIRS,—On one occasion two pints of normal saline solution which "felt cold" to the finger of the surgeon and which he estimated to be about 85° F. were given intravenously in an emergency to a woman who was in a low state from long-continued sepsis. She had never had convulsions, but within 10 minutes she began to shiver with great violence and a severe rigor resulted, which lasted an hour in spite of the administration of a quarter of a grain of morphia and of brandy and the application of hot bottles, &c. In another case, a lad, aged 15 years, was admitted unconscious and apparently moribund, suffering from bubonic plague, with the respirations 16 and the temperature 36·5° C. (97·6° F.). His pulse was 140 and very feeble. He was given Pasteur's "serum antipestens" intravenously. Six bottles were prepared, but by the time four had been injected (a Roux syringe with a cannula in the median basilic vein being used) the boy's respirations had dropped to five or six a minute with most intense respiratory embarrassment and but little cyanosis, so I stopped the injection. Strychnine and coffee and brandy enema were given and his respirations and pulse, which had become imperceptible at the wrist, gradually improved, so that in two hours his respirations were 15 and his pulse 110 and his general condition was astonishingly good. From this time onwards he improved rapidly and recovered completely under ordinary stimulating treatment. In another case in which plague serum was being given intravenously I remember noticing intense respiratory distress with great slowing of respiration and but slight cyanosis, all of which disappeared in a few hours.

In a fourth case, a married woman, aged 30 years, a strong "wiry" subject, admitted with post-puerperal sepsis, was treated on ordinary lines by curettage, continuous irrigation, &c., for some weeks until finally Douglas's pouch was opened and, later, hysterectomy was performed. She went on fairly well for six days, but with a considerable degree of bronchitis, the temperature averaging from 37·8° to 39° C. (from 100° to 102·2° F.). On the evening of the sixth day I injected into the right median basilic vein (after constricting the upper arm and plunging a fine trocar and cannula into the distended vein) some "anti-streptococcic serum" (B., W., and Co., Series 68). I injected one bottle (10 cubic centimetres) without having warmed it and was about to inject a second dose of 10 cubic centimetres when the woman instantly uttered a low cry and after a few twitching convulsive movements of the head and face stopped breathing—that is, she could not have taken more than two or three breaths after the first drops of serum entered the vein. I noticed that her pupils very quickly widened and that her face assumed an ashy pallor, but no cyanosis was present. Oxygen, artificial respiration, and the battery were tried, all unsuccessfully. Seven minutes after she stopped breathing occasional feeble churning movements of the heart were audible on direct auscultation, but ten minutes after the respiratory stoppage the heart was silent and the woman was dead. As to the cause of death (which I believe was certainly attributable to the injection of the serum) I do not think "air embolism" is admissible, because immediately after disconnecting the syringe barrel from the cannula a few drops of blood exuded before I could apply my thumb, showing that there was certainly not a negative pressure in the vein. My procedure, too, was exactly the same in this case as in many other cases in which I have injected serum (including two injections of two bottles into this same woman three weeks previously when her general condition was not so very unsatisfactory). With regard to "cardiac syncope," her respirations ceased immediately though her heart could be heard beating seven minutes afterwards. "Pulmonary embolism" seems very likely, but the serum, though not perfectly clear, did not contain any large shreds. "Immediate effusion into the lungs" suggested itself, but no râles were audible in her last two or three breaths or while artificial respiration was going on. Was the death due to some violent specific action of the serum on a debilitated patient? I remember reading of a collapse after intravenous use of anti-diphtheritic serum but am unable to find the account. I should be glad to hear of any similar experiences by others and suggestions as to the cause of death. The husband had the body removed within an hour of death, precluding the possibility of a post-mortem examination. For permission to report this case I am indebted to Dr. Connolly.

I am, Sirs, yours faithfully,

Brisbane Hospital. R. A. O'BRIEN, M.B., B.S. Melb.

THE DANGERS OF COMMON COLDS.

To the Editors of THE LANCET.

SIRS,—In his letter in THE LANCET of Oct. 4th, p. 957, Dr. R. Prosser White calls attention to a subject of practical importance. In my case coryza begins with a peculiar feeling of dryness in the posterior nares, sometimes in the throat. This is followed in about 24 hours by increased secretion from the nostrils, watering of the eyes, and other painful symptoms. The area of distress goes on increasing for three or four days. It occupies the whole nasal passages and may get into the frontal sinus. It creeps down the pharynx, enters the larynx, and may reach the bronchial tubes. I am inclined to think that this disease is infectious. Whether it be due to a microbe or some specific morbid process the important question comes, Can medicine do nothing to arrest the onward spread of the disease by direct applications to the spot originally affected, which we can reach by injections or by spray? I have tried injections by a glass syringe of solutions of boric acid, menthol, laudanum, and nitrate of silver. The first of these drugs seems useless; the last appeared to me to be the most efficacious in stopping the march of the disease; but it causes painful irritation of its own, which, however, soon subsides. I am hopeful that some more effectual means will yet be discovered of arresting the morbid process ere it has spread widely.

I am, Sirs, yours faithfully,

Musselburgh, Oct. 5th, 1902. WILLIAM W. IRELAND.

THE REPORT OF DR. DARRA MAIR ON "SORE-THROAT ILLNESS AT DITCHAM."

To the Editors of THE LANCET.

SIRS,—This significant report, about which the members of the public health profession are strangely silent, has brought into prominence three important facts: (1) the extraordinary capacity for spreading disease possessed by hospital cases; (2) the fact that a scarlet fever patient on discharge from a hospital may sow broadcast both scarlet fever and diphtheria; and (3) the fact that the mischief thus wrought is generally covered up by the definition of a "return case" as a case which arises in the home within three weeks of the return thither of a hospital case. Dr. Killick Millard has called attention to the fact that not one of the cases which formed the subject of Dr. Darra Mair's investigation occurred in the home to which the case child was sent from

the Portsmouth Isolation Hospital, all being thus barred from inclusion in the list of "return cases" of that institution. One cannot help wondering with what object this definition, which has proved so comforting to lay members of sanitary committees when disquieted by the ogre of endemic fever, was framed. It is not a standard by which anything can be measured. It explains nothing. While it sheds no light on anything in particular it screens from critical examination facts which tell against the aggregation of the infective sick. Is this its purpose? Not only does this definition come short as to time and place, but it takes no cognisance of the fact that the home is probably the last place in which "return cases" are likely to arise, seeing that, as pointed out by Dr. Darra Mair, it is likely that the other members of the family have had recent mild (perhaps) though temporarily protective attacks, and are not therefore so liable to furnish "returns" as are the friends, neighbours, schoolmates, &c. The admitted evils of aggregation are accumulating and in the face of them—serious enough in all conscience—it is amazing to observe the consensus of determination not to deal with the question of hospital miscalled "isolation" on its merits. The system had its inception in an irrational surmise, for which there was not a rag of sanction either of experience or science. In an evil hour, and while it was yet on its trial, it became municipalised, which is to say immortalised, for then the battle-ground was shifted and it was no longer the striving of truth against falsehood, but of truth against vested interests—against an overwhelming dread of stultification, against a dominating love of power. It is not the only instance in which municipalisation has set the goal to real progress and it will not be the last.

I am, Sirs, yours faithfully,

Nottingham, Sept. 30th, 1902. EDWARD DEAN MARRIOTT.

SANITATION AT LEICESTER.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

(*Continued from p. 953.*)

Contaminated Street Dust and the Pavement Problem.—Abolition of Pail-closets and Ashpits.

AMONG the various questions which have received particular attention at the hands of the Leicester sanitary authorities the influence of the dust and the condition of the roads has been especially considered. The inhabitants of a town not only breathe but also swallow the dust blown up from the streets. It enters their lungs with the air and their stomachs by mixing with the saliva in their mouths. Further, this dust falls on the food stored in pantries, kitchens, and elsewhere and is thus eaten with the meals. Therefore the composition of street dust becomes a matter of serious import and with the aid of bacteriology it is now possible to ascertain whether such dust contains pathogenic germs. Mr. E. George Mawbey, M.Inst.C.E. and borough surveyor of Leicester, has devoted special attention to this question and read a paper on the subject at the recent meeting of the British Sanitary Institute. When discussing this matter Mr. Mawbey placed in my hand a report recently issued by Dr. John Norton and Dr. H. Wilson Hake on behalf of the Western Australian Agency, describing the result of their examination of various specimens of wood paving that had been used in the streets of London. They found the bacteria of tetanus, malignant œdema, glanders and anthrax, streptococci, staphylococci, torulæ and sarcinæ, the bacillus proteus, the bacillus subtilis, and the bacillus coli communis. When guinea-pigs and rabbits were inoculated with culture-broth made from this London wood paving they died. Other investigators, notably Dr. S. Rideal, have found the bacillus enteritidis sporogenes, which is considered by several authorities to be connected with the presence of diarrhœa in human beings. Of course, macadamised roads and the spaces between the pavement stones are still more absorbent and thus street dust may become very dangerous unless great care is taken to keep the streets thoroughly clean. It is in this respect that the sanitary authorities of Leicester have shown considerable energy and enterprise. They spend £10,000 a year solely for the sweeping and watering of the streets. The street boys employed by the corporation pick up no less than 450 tons of horse-droppings in the course of the year. Altogether the sweepings from the roads and streets of the borough amount to some 18,000 tons per annum. These sweepings comprise the excreta of a great number of animals besides horses. There are dogs and cats and these domestic pets being largely fed on animal matter more or less decayed their excreta are likely to be particularly dangerous. Then there are the cows, sheep, and other cattle driven through the streets to the slaughter-houses. Indeed, one of the arguments in favour of a single municipal slaughter-house, conveniently situated, is that it would lessen the soiling of the streets.

The question of the dogs is more serious than appears at first sight. In the borough of Leicester alone there were, at the commencement of the year, no less than 7280 dog licences issued. All these dogs daily contribute to the soiling of the streets. Then very offensive offal from the various private slaughter-houses is conveyed through the streets and occasionally spilt, and there are slops, fish offal, droppings from fowls, and the like. To all this decomposing organic matter must be added the direct pathogenic contamination caused by diseased persons spitting in the streets and shops. In hot dry weather dust, in spite of the constant watering, is readily formed and it settles on the fruits, vegetables, sweets, and other eatables exposed for sale in the streets and shops. It is also during such weather that diarrhœa is especially prevalent. Then, when rain comes, it is a well-known fact that the first washings from the streets that reach the sewers are particularly foul. But all this very foul water does not reach the sewers. A portion of it sinks between the pavement stones and in the earth surrounding the fragments of macadam stone, where it is stored ready to form more dust on the return of dry weather. But for the fact that nature provides her own remedy the consequences would, indeed, be most serious. The foul matter is broken up and oxidised and the process of nitrification ultimately purifies that which would otherwise produce appalling epidemics. Still, this process requires time and in narrow, crowded streets where there is much pollution and but little air space or sunshine it cannot be accomplished with sufficient rapidity; therefore the endeavours of nature must be supplemented by the work of man and hence the necessity of very efficient scavenging.

In view of all these facts the authorities at Leicester are spending more than is usually done in the mere watering and sweeping of the streets. In many towns there is a tendency to keep the main or show streets clean and to neglect the smaller and poorer streets. If there is to be any negligence at all it is surely the broad and handsome streets that could with the least risk dispense with watering and sweeping. It is to prevent the formation and blowing about of dust that the streets must be frequently watered. In the hope of disinfecting such dust as may nevertheless accumulate the Leicester authorities place disinfectant blocks in the water-carts. In other towns permanganate of potassium is used and it would be of great practical service if bacteriological experiments could be made so as to show which disinfectant is most effective for the watering of the streets. Mr. Mawbey, as borough surveyor, has made a series of recommendations. He urges that cab-ranks should not only be washed and disinfected daily but that they should be provided with impervious pavement or cement concrete. With regard to sweeping machines, he is in favour of motor vehicles. They are not only more easy to work but they prevent the pollution of streets by the use of horses. Indeed, electric traction and self-propelled vehicles will effect a considerable improvement in the condition of the streets. The motor-car, however, is a mixed blessing. It does not soil the street as horses do but it raises a terrible amount of dust and helps to disseminate whatever contamination may be in existence. The ideal, of course, would be to have a perfectly water-tight pavement. Such a pavement I have recently seen in a street in Nottingham. It is a sort of macadam mixed with tar and other ingredients and has become as hard and as solid as stone. From a sanitary point of view this is excellent, but it is very inconvenient, for it literally locks up the surface of the street and there is no digging down to reach the drain-pipes, the sewers, or other services, such as gas- or water-pipes, that may be underneath.

Far more dangerous, however, than the dust generated in the streets is that which is blown out of the pail-closets and the privy ashpits. These are in the courts and in the backs

of the houses and the dust from them falls on the food and plates that are in the sculleries and kitchens which are also generally at the backs of the houses. But some portion of such dust is also blown through the passages and court entrances and thus reaches the streets. In this respect the sanitary authorities have proceeded with commendable vigour during the last two or three years. There were some 6700 pail-closets in Leicester and it had often been urged that they were a cause of typhoid fever in poor and overcrowded quarters. The corporation therefore determined to abolish all the pails in the town. Whenever the medical officer of health reported that they were nuisances notices were served for their abolition, but at the same time the corporation obtained powers to help in this work of transformation. For the small cottage property it cost about £7 to convert a pail-closet into a water-closet and to connect it with the sewer. The authorities contributed about £3 towards this outlay and the owner of the house paid the rest. The medical officer was able to certify that nearly all the pail-closets were nuisances and thus the owners were compelled to alter them and to pay a part of the cost. In a very few instances where this could not be done the corporation paid for the entire cost of the conversion. Nor was there any difficulty in dealing with contractors engaged in removing the soil from the pails. Such contractors only existed in the areas added to the borough under the Extension Act of 1891, but they raised no objections. In the old limits of the borough the pails had been removed by the servants of the corporation, but now there remain hardly any pail-closets in Leicester.

Together with the abolition of the pail-closet efforts have also been made to close up all the ash or refuse pits and to replace these by portable metallic bins. These bins are a great improvement, but difficulties still arise among the poorer and more careless sections of the population. Instead of carefully placing their ashes or refuse in the bin and then covering it up with the lid the refuse is thrown in so carelessly that a portion falls outside and thus again gives rise to injurious dust. In some cases where the lid of an empty bin was fastened on with string the inhabitants, instead of taking the trouble to cut the string, threw their refuse and ashes on to the ground outside the bin. With such people constant scavenging is necessary and it is satisfactory to note that at Leicester special care is devoted to secure effective scavenging.

(To be continued.)

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Delamere Sanatorium.

THE Delamere Sanatorium, as the new branch of the Manchester and Salford Hospital for Consumption and Diseases of the Chest and Throat is sure to be called, is a most important addition to the means which Manchester possesses for combating tuberculosis. It owes its origin to the munificence of Mr. W. J. Crossley who has given it for the benefit of the community at a cost of £70,000 or £75,000. Towards its endowment a sum of £100,000 is now being raised. The site extends over 70 acres and is about three miles from Mouldsworth, Delamere, and Frodsham. It is 450 feet above sea level, is well wooded, and commands extensive views. The main building has a frontage of 310 feet and will accommodate 90 patients. There will be a detached administrative block. The north side of the building will contain on the ground floor a dining hall and a chapel for 120 persons. There will be four wards for six beds and 10 for four beds, while the rest will be single bedrooms. The windows will be as large as possible and spacious sitting-rooms and open-air balconies will be provided. Before these lines are posted the ceremony of laying memorial stones will have taken place; Mrs. Crossley, the Bishop of Manchester, the Lord Mayor, Dr. Arthur Ransome, and Dr. J. Niven all taking part in the ceremony of placing the stones.

The Baguley Hospital.

The hospital at Baguley, near Altrincham, which has been provided for infectious diseases by the Withington district council, was publicly opened on Oct. 4th by Lord Derby. It is intended for the reception of 100 patients and it has been built at a cost of something over £65,000. For many years past the infectious cases from the Withington district have been received at Monsall, but the Manchester corporation now requires the whole of the accommodation, so that the neighbouring sanitary authorities have been thrown upon their own resources. After much difficulty—for, as Lord Derby observed, "everybody said that patients suffering from infectious disease should be segregated, but no one desired them for neighbours"—the Withington council obtained 32 acres of land at Baguley, 12 of which have been inclosed for the new hospital. It must, however, be looked upon as a sort of coöperative institution, as it is to serve for the several districts of Levenshulme, Moss Side, and Bucklow. The Bucklow joint board is to have 30 beds reserved for its use at an annual charge of £8 per bed, the Moss Side council 20 beds at £19 12*s.* 7*d.* per bed, and Levenshulme 10 beds at a similar charge. In addition, 30*s.* a week are to be paid for each patient, and the Withington council reserves the right to use the beds when they are not required by the other authorities. This arrangement is to hold for 30 years. The hospital has added 5½*d.* in the pound to the rates of the district. This will no doubt be resented by some, especially as there is an unusually grievous wail throughout the land at the rapid increase of rates, but in this instance the money laid out on the hospital has been well and economically spent, and it will probably save the ratepayers more than the 5½*d.* in the pound. As the Lord Mayor of Manchester, who was present, said: "Many years of municipal work had taught him that the toughest work of all was sanitary work. It was criticised by outsiders, whose criticism was often rash, and also by members of the corporation." It seems, by the way, as if the word "hospital" was soon to be ousted by that of "sanatorium." There is the sanatorium—indeed, the sanatoriums, at Delamere, for Liverpool as well as Manchester is represented—there are sanatoriums all over the country, and this infectious disease hospital is also dubbed a "sanatorium" by the local press.

Prize giving at the Victoria Dental Hospital.

The prizes gained by students at the Victoria Dental Hospital were given at the Owens College on Sept. 30th, Dr. J. J. Cox presiding. The prizes were handed to the winners by Professor W. Stirling, who delivered an address on the History of Anæsthesia and the Benefits derived from it. Dr. Cox advocated greater attention being given to the teeth between the ages of five and 25 years, the result of which would be a much better developed and more healthy race. He said that it was to be hoped that before long dental surgeons would be appointed to take care of the teeth of children in rate-supported public schools and in reformatories, also that the War Office might appoint dentists as a branch of the medical staff. He said that it was absurd to deal with the care of soldiers' teeth as in the South African war, when six dentists were sent out to look after the teeth of 200,000 men scattered over an enormous area of country. He thought that all dental surgeons should be qualified medical men and he suggested that perhaps some subjects not quite necessary for the dental profession might be omitted and "a modified and shorter curriculum arranged which would allow of the Owens College granting a degree in dental surgery. By this means dental surgery would soon take its proper place as a branch of the general medical profession." The dean of the hospital stated that though over 20,000 cases were treated at the hospital last year the dental needs of the poor of Manchester, Salford, and the district generally were only touched at the very fringe.

Hospital Accommodation at Stockport.

At the meeting of the county borough council of Stockport on Oct. 1st the sanitary committee reported its intention to increase the accommodation at the borough isolation hospital. It is proposed to erect "a combined observation and typhoid fever block, with two wards of four beds each on the ground floor, and one ward of eight beds on the floor above."

Deceiving the Inspector.

At the same meeting of the county borough council of Stockport charges were referred to relating to the sewage works. They were (1) that it had been the practice to post sentinels to watch for the approach of the Mersey and Irwell inspector, and (2) that to deceive the inspector the sluice gate had been secretly opened to pass sludge into the river. The chairman of the sewage outfall committee, however, explained that

it was impossible to deceive the inspector in the manner alleged. It is remarkable how many impossible things are done. Many years ago the system of signalling the approach of the Government inspector of chemical works was explained to me, by which over a wide district of Lancashire in a very short time the various works had made all snug and in accordance with well-understood requirements so that when the inspector arrived no noxious fumes were poured out into the air and all was just as it should be. The system almost rivalled that which is said to be in vogue among the natives of South Africa and of India, by which news is conveyed with mysterious rapidity, far outstripping our slower and less subtle methods.

The Royal Infirmary.

The committee of trustees of the Manchester Royal Infirmary which was recently formed to oppose the rebuilding of the infirmary on the present site held a meeting last week, Mr. Joseph Bell presiding. A resolution was passed to inform the infirmary board that they will assist at the meeting of trustees to be held on Oct. 16th in passing any necessary rules to allow of the resignation of the board of management at any times not provided for, and "that this committee understands that no new board will be nominated at that meeting." Also "That the above-mentioned meeting of trustees be asked to confirm the policy that there shall be no re-building on the Piccadilly site, and that a new infirmary be built at Stanley Grove without delay, unless a better site offers." There seems to be a chance for the scheme of an art gallery and library for the city on the Piccadilly site being revived, for an offer of about £150,000 for the site of the old town hall, now the free reference library, has already been received. This sum would go some way towards providing the purchase money for the present infirmary site.

Treatment of Skin Diseases in Manchester.

The premises at present used for the Hospital for Diseases of the Skin in Quay-street are quite inadequate for their purpose, and an effort is being made to raise £35,000 to build a new hospital. A special meeting on the subject was held in the town hall on Oct. 3rd, the Lord Mayor presiding. A resolution was passed recommending "the new building scheme to the support of all who are interested in the amelioration of human suffering, and especially of the poor who otherwise cannot receive efficient help." During the eight months of the present year the number of attendances of patients has been 36,385. Mr. W. J. Crossley said that at least 25 beds were necessary and that no doubt it would cost from £60 to £80 annually to maintain them. He thought that there was no need to fear but that Manchester would provide the £35,000. Sir W. Bailey, referring to the light treatment, said that Queen Alexandra paid for the first set of apparatus for a London hospital and it was interesting to Manchester citizens to know that the second institution to begin the light treatment was in Manchester.

Oct. 7th.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Lunacy in Ireland.

THE fifty-first report of the Inspectors of Lunatics, Ireland, deals with the conditions prevailing during the year 1901 in the district, criminal, and private lunatic asylums of Ireland. The total number of lunatics in establishments on Jan. 1st, 1902, was 21,630, as against 21,169 on the same date of the previous year, or an increase of 461 patients for the year, which compares unfavourably with the corresponding increase for the year 1900, which was 306. This increase refers to patients in both public and private asylums. The admissions to district asylums during the year amounted to 3572, while for private asylums the number was 209. The rate of increase of admissions is shown by comparing the statistics for decennial periods. Thus for the decade 1881 to 1890 the average annual admissions to district asylums were 2792, while for the decade 1891 to 1900 the number was 3302. For private asylums the average figures for the corresponding decades were 157 and 184 per annum. The total number of lunatics and idiots in Ireland in 1851 was equal to a ratio of 1 to 657 of the population; in 1861 it was 1 to 411; in 1871 it was 1 to 328; in 1881 it was 1 to 281; in 1891 it was 1 to 222; and in 1901 it was 1 to 178. The total number of patients discharged as recovered from all institutions amounted to 1303 during the year, or 7·7 per cent. of the average number resident. The deaths during the year amounted to 1257, or 7·5 per cent. as calculated on the same basis. Of the deaths two were from homicide and four from suicide, 47 were due to general paralysis of the insane, 108 to cardiac disease, 313 to pulmonary tuberculosis, and the rest to other causes. Outbreaks of zymotic disease in the form of dysentery, erysipelas, typhoid fever, and influenza occurred to a marked extent in the asylums at Ballinasloe, Castlebar, Cork, Downpatrick, Monaghan, Mullingar, and Richmond, while those at Armagh, Carlow, and Ennis were reported free from such outbreaks. The accommodation for the insane poor in Ireland is, adds the report, in many districts still insufficient. In 12 out of the 24 public asylums steps are being taken to provide additional accommodation. The inspectors advert to the necessity of providing a separate institution for the care and training of idiot and imbecile pauper children who are at present in workhouses or in the charge of friends and relatives, and for whom no provision of the kind referred to exists.

The Royal College of Physicians of Ireland and the New Lord Lieutenant.

The Earl of Dudley, the new Lord Lieutenant of Ireland, received on Sept. 30th, at Dublin Castle, an address from the Royal College of Physicians of Ireland which cordially welcomed him to the country in his official position. The address also congratulated the King through his representative upon his recovery from his recent illness and expressed the hope that His Majesty would be able at no distant date to visit Ireland in person. The deputation comprised the following Fellows: Sir Christopher J. Nixon (President of the College), Dr. Joseph M. Redmond (Vice-President), Dr. Wallace Beatty, Dr. J. Byrne Coleman, C.M.G., Sir Francis R Cruise, Dr. Henry C. Drury, Sir George F. Duffey, Dr. John Magee Finny, Mr. Andrew John Horne, Dr. Henry Jellett, Deputy Surgeon-General Christopher Joynt, Mr. A. Nixon Montgomery, Sir J. W. Moore, Dr. George J. Peacocke, Dr. J. F. Pollock, Dr. W. G. Smith, Mr. W. L. Symes, Mr. E. Hastings Tweedy, Mr. T. Henry Wilson, Dr. W. A. Winter, and Dr. James Craig (Registrar) who read the address. His Excellency made a suitable and appreciative reply.

Notification of Infectious Diseases in Kingstown.

The *Irish Times* of Oct. 7th contained a leading article congratulating the Kingstown urban district council on the determination to which it had come on the previous day. By a majority of four the council decided to adopt the Infectious Diseases Act, 1889, and the Infectious Diseases Prevention Act, 1890, thus falling into line with the city of Dublin and the urban areas of Blackrock, Dalkey, and Bray. The fact that an outbreak of diphtheria was required in order to induce the authorities at Kingstown to adopt the Acts does not seem a reason why they merit much congratulation.

Pulmonary Tuberculosis in Belfast.

A paper read by Mr. Robert Brown (secretary of the Ulster Association for the Prevention of Tuberculosis) in the Economic Section of the British Association for the Advancement of Science in Belfast has raised considerable interest in the question of the causes and prevention of pulmonary tuberculosis and there has been some important correspondence in the Belfast press on the matter. As far as Belfast and the north of Ireland are concerned tuberculosis is not only most prevalent but statistics would, it is feared, tend to show that the disease is not, as in other places, diminishing. In grappling with the question of the prevention of such a disease in Belfast no progress will be made until some plan for the notification of the disease is arranged, and as far as Belfast is concerned the registration of deaths in that city is grossly deficient. At present in Belfast, the central public health authority cannot tell for a period of three months even where a person has died in many cases. It is this want of knowledge of the place of death that is really the crux of the whole question at present, and until the central authority has the power immediately after the death of a phthisical patient to locate the place of death and to take means to disinfect the house the chance of really preventing the spread of the disease is minimised to a very great extent.

The Smiley Cottage Hospital.

The foundation-stone of the Smiley Cottage Hospital, the gift of Mr. Hugh Smiley to Larne, has been

laid by his wife. An excellent site has been provided in a commanding and elevated situation. The hospital, for which the sum of £10,000 has been provided by Mr. Smiley, will have a frontage of 140 feet and an extended back of 80 feet and will consist of a central block with wings on either side, each to accommodate 10 adult patients. This institution, when finished, will be of the greatest service to the inhabitants of Larne.

Royal Hospital Saturday Collection, Belfast.

The collection for the Royal Victoria Hospital, Belfast, which took place in the streets on Sept. 18th, amounted to £403 after the payment of necessary expenses.

Chair of Physiology in Queen's College, Belfast

Dr. T. H. Milroy, assistant to Professor E. A. Schäfer of Edinburgh, has been appointed to the Dunville professorship of physiology in Queen's College, Belfast.

Health of Belfast.

At the monthly meeting of the city council of Belfast, held on Oct. 1st, it was reported that the death-rate of Belfast still keeps low, 17·2 per 1000, as compared with 22 in the corresponding period of last year. The number of cases of zymotic disease notified were less than half of those notified during the same period of last year. The number of cases of typhoid fever was 100, while in the corresponding period of 1901 they were 374. On Sept. 2nd and 3rd there was a heavy rainfall; on the former day the rain gauge at the waterworks gave a reading of 2·35 and on the latter 1·03, making a total of 3·38 inches during the two days. This excessive rainfall caused serious flooding in many parts of the city and apart from the inconvenience and danger caused thereby the flooding of the lower parts of the houses must necessarily be a source of danger to the inhabitants living therein. The city surveyor of Belfast has presented a report to the works and improvement committees in reference to this disastrous flooding which has now occurred on two separate occasions within the past year. Various causes (abnormal rainfall, overflowing of the rivers, insufficiency of the bridges to let the water through by reason of which the water flowed out of its natural bed, and blocking of weirs) were assigned and suggestions (such as tapping the rivers at their upper reaches and conducting the water directly to the tideway by means of culverts) were made to solve the difficulty. It was decided to print the surveyor's report and to submit it to the members of these committees for further consideration.

Death of James Dickson, M.D. R.U.I., M.R.C.S. Eng., J.P.

I regret to announce the death of Dr. James Dickson, which took place in Dublin on Oct. 3rd. The deceased has for 45 years been the leading physician in Ballynahinch, co. Down, where in addition to a very large practice he was dispensary medical officer. Three years ago he relinquished practice and went to reside in Ashville, Killinchy, co. Down. Two weeks ago he went to Dublin to undergo an operation but acute bronchitis set in and carried him off. He was buried at Killyleagh, co. Down, on Oct. 6th. As a very skilful medical man, a trusted friend, and as a most honourable man, Dr. Dickson was greatly respected among a very large *clientèle* of patients. He was a justice of the peace of the county of Down.

Oct. 7th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Cause of Death in the Case of the late M. Zola.

THERE is great discussion at the present time in the columns of the press as to the causes of the death of Zola. After reading the official reports it may confidently be stated that he succumbed owing to two causes, the one poisoning by carbon monoxide from which he might have recovered had he been rescued in time as was the case with his wife, and the other asphyxiation from carbon dioxide, an irrespirable gas which had spread out all over the floor of the room which was firmly closed up. He fell into this bath of carbon dioxide when he got out of bed and was seized with vertigo. The post-mortem examination revealed the presence of a small quantity of carbon monoxide in the blood and in the viscera. The organs, with the exception of a slight degree of old sclerosis of one kidney, were all healthy. The primary cause of the catastrophe was a defective stove in which a servant during the day had tried to light a fire made of blocks of compressed charcoal. The fire apparently would not light and the servant went away without noticing that combustion had really begun. It smouldered all day and during the night and in this deceptive manner gave out deleterious gases which filled the room, for the flue of the stove was choked up.

Fœticide from the Religious Point of View.

The old problem as to whether an accoucheur has the right to kill the child to save the mother has again been brought forward by the publication of a book entitled "Le Médecin Chrétien." The work is a course of practical lessons in medical deontology and is written by two professors of the Catholic University of Lille, M. Moureau and M. Laverand. Here are their conclusions: (1) embryotomy upon a living child is forbidden absolutely; (2) abortion, even as the last resource to save the mother, is strictly forbidden; (3) laparotomy to extract a living or presumably living child in cases of extra-uterine pregnancy is forbidden for the same reasons as embryotomy or abortion, the fact that the pregnancy is extra-uterine making no change in the moral rules applicable to a normal pregnancy. These propositions, formulated, it would appear, in accordance with the decrees of the Sacred Congregation of the Holy Office, have greatly disturbed a certain number of medical men, not only from their own conscientious point of view, but also from the fear that if once they came to the ears of the public the consequences would be deplorable. Already there exists a school of French accoucheurs which in a somewhat disquieting manner affects the right of insisting on performing operations on the mother which it thinks fitting for the preservation of the child, such as Cæsarean section or symphysiotomy. On account of this school an opinion was put forward some two years ago by the consultative committee of the Assistance Publique that the accoucheur's duty was to lay the state of the case plainly before the mother and then to abide by her decision. Dr. Thoyer-Rozat, writing in the *Presse Médicale* with a view of calming the scruples of Roman Catholic medical men, points out that a decree of the Holy Office has not the force of a law for Roman Catholics. A Papal Bull is necessary for this and such Bull has not been signed with regard to the matter in hand. Further, Dr. Thoyer-Rozat shows that the essay of M. Moureau and M. Laverand is incomplete, for they have taken no account of cases of severe dystocia or monstrosity where the infant is hardly viable and where the course recommended by them would lead to two deaths instead of one. As to cases of extra-uterine pregnancy manual dexterity and diagnosis have advanced so of late years that the physician ought to be left to decide according to his conscience as to the right to operate at an early date, for the chances of the fœtus living in the future are in such cases infinitesimal.

Ethyl Chloride as an Anæsthetic.

At the recent meeting of the Society of Surgery M. Le Dentu read a communication supplied by M. Girard, a naval surgeon, dealing with 78 cases of anæsthesia by ethyl chloride in the human subject and with 75 cases in animals. These cases confirm what is already known about this anæsthetic. A short pre anæsthetic period, the almost complete absence of muscular excitement, the abrupt appearance of anæsthesia, suppression of the corneal reflex and dilatation of the pupil when general sensibility has disappeared, and an almost instantaneous awakening followed by no headache or malaise—such are the characteristics of this anæsthetic. The anæsthesia is fleeting and can only be prolonged by giving the patient successive doses at reasonable intervals. Accordingly ethyl chloride is scarcely ever employed in lengthy operations except as a preliminary to chloroform or ether where it shortens the period of excitement.

Oct. 7th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Medical Congresses.

IN Germany the medical congresses usually meet in September, this month being specially convenient for these gatherings as the vacations of the universities and the various medical societies are then in progress. A considerable number of congresses have therefore just been held. One of the most important was the annual meeting of the German

Association of Naturalists and Medical Men, which this year departed from its habitual course by meeting outside the boundaries of the German Empire—namely, in Carlsbad, the celebrated watering-place in Bohemia. It was therefore representatives of the Austrian Government who played the part of host, and at the inaugural meeting, held under the presidency of Professor Heubner of Berlin, the Austrian Minister of Education, amid immense applause, discoursed on the unity of German science independently of political frontiers. Other addresses of welcome were delivered by representatives of the town of Carlsbad, of the local medical profession, and of the German University of Prague. The proceedings of the first general meeting then began with addresses delivered by Professor Hofmeister of Strassburg on the Structure of Albuminous Molecules, by Professor Weber of Amsterdam on the Malay Archipelago and its Fauna, and by Dr. Voller of Hamburg on Wireless Telegraphy. At the second general meeting addresses were delivered by Professor von Eiselsberg of Vienna on the Function of the Thyroid Gland, by Professor Wettstein of Vienna on Neo-Lamarckismus, and by Dr. von Miller of Munich on Nature and Electrical Technique. At a general meeting of the 17 medical sections of the association Professor Leube read a paper on Physiological Albuminuria. At a joint meeting of the sections of surgery and of clinical medicine a very interesting discussion took place on Cholelithiasis. Next year the association will meet at Cassel.—The German Association of Public Health met in Munich, Professor Carl Fraenkel of Halle being in the chair. The first subject of discussion was the control of rivers, canals, &c., the introductory paper being read by Professor Gaertner of Jena. Dr. K. Grassmann of Munich read a paper on the Influence of Unqualified Medical Practice on the Public Health; he was strongly in favour of legislation against quackery. Professor Emmerich of Munich spoke on some hygienic aspects of the baking industry with especial reference to the injury done to the health of bakers by their excessively long hours of work. He recommended that this business should be carried on in large factories and not as at present in numerous small bakehouses. A third subject of discussion was the hygiene of dwelling-houses.—The Association of Medical Officers of Railways met in Munich at the same time as the German Association of Public Health and the meeting was attended by no less than 708 members coming from every part of Germany, a number far exceeding the attendance at the Congress of Public Health. Professor Eversbusch of Munich showed an apparatus for testing the acuteness of colour vision. In this apparatus the signals displayed on railways and also mist, fog, and other circumstances affecting the visibility of the signals were reproduced. Dr. Zeitlmann read a paper on the Morbidity and Mortality of the Railway Men in Bavaria. Dr. Raab of Nuremberg read a paper on Spirit-drinking among Railway Men. Dr. Schwechten of Berlin read a paper on First Aid in Accidents, after which the members proceeded to the central railway station where models of carriages furnished with requisites for the conveyance and treatment of injured persons were shown.—The Association of the Prussian Government Medical Officers held a meeting at Cassel and papers were read on Legislation relative to Infectious Diseases and on the Hygienic Supervision of Schools.

Statistics of Medical Students

According to the records of the statistical office published by Dr. Heimann in the *Deutsche Medicinische Wochenschrift* there is at last a decrease in the number of medical students. It is indeed high time that the present overcrowding of the profession should abate, for Germany is the only country in Europe in which the number of medical students has doubled within 10 years, rising from 4017 in 1880 to 8724 in 1890. In 1900 there were only 7433 medical students registered, so that the average proportion of medical students to each million of the population was 174 in the period 1885–90 and only 143 in the period 1895–1900. Of all the German universities Munich and Berlin have the greatest number of medical students.

Professor Virchow's Successor.

According to the daily press Professor Orth of Göttingen has been appointed successor to the late Professor Virchow. Professor Orth, a son of a well-known physician at the famous spa of Ems, was assistant to his celebrated predecessor at the Berlin Pathological Institute from 1873 to 1879 and was eventually appointed ordinary professor of pathological anatomy at Göttingen. He has brought out text books on normal histology and on pathological anatomy, in which prominence is given to Professor Virchow's views and he has recently commenced a handbook of pathology. He has done valuable work in bacteriology and in the pathology of tuberculosis.

The Early Diagnosis of Jaundice.

Dr. Hamel, assistant in the Berlin Medical Clinic of the late Professor Gerhardt, describes in the *Deutsche Medicinische Wochenschrift* a method of ascertaining the presence of jaundice at an early date when the yellowish hue of the skin is not yet marked. He points out that in the early stages of jaundice the examination of the urine often fails because bilirubin does not usually make its appearance until afterwards. He therefore recommends in doubtful cases an examination of the blood serum of the patients, for as the abnormal colour of the skin, the mucous membranes, and other parts is caused by yellowness of the serum, it is in the serum that this symptom will be first appreciable. Normal serum is a colourless fluid, so that even a slight degree of jaundice will be distinctly visible. The serum test was useful in cases where the symptoms of illness have apparently disappeared but pigmentation of the skin continues to exist. The serum is obtained by making a slight puncture in the lobule of the ear and introducing from 15 to 20 drops of blood into a capillary tube which is closed at both ends by wax. The tube is then placed in a vertical position, the result being that after a few hours the serum separates from the clot and may be easily examined.

Oct. 6th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Free Milk in New York.

MR. NATHAN STRAUS has now for 11 summers given pure fresh milk to the young children of New York city. In the middle of September 10 of the 14 milk stations were closed, but the remaining four will be carried on throughout the winter. In the course of the summer which has just ended 976,040 bottles of pasteurised milk and milk food were dispensed, besides about 1,000,000 glasses of raw and pasteurised milk which were consumed at the stations. The greater portion of the milk has been distributed to the ailing children of the tenements of the east and west sides of the city. All physicians practising among the poor, the summer corps of physicians of the Department of Health, and charitable societies have coöperated in this good work. The low death-rate among children under five years of age in New York is largely attributed to the distribution of pasteurised and modified milk from the milk stations maintained by Mr. Nathan Straus. According to Dr. J. Corwin Mahey, of the bacteriological laboratory of the Department of Health, the statistics of that department indicate that the death-rate among children under five years of age has steadily decreased concurrently with the increase in the distribution of pasteurised milk. This death-rate during the hottest months of the year—June, July, and August—when the danger to infant life is greatest, has been reduced from 126 per 1000 in 1891 to 63·6 per 1000 in the season just passed. Further than this, a careful investigation of the vital statistics will show that a very low death-rate for children is characteristic of those sections of the city where the distributing depôts of the Nathan Straus Laboratory are located. The foregoing statement is a magnificent testimony to the philanthropic work of Mr. Straus and might serve to spur on rich men in all large cities to emulate his generosity.

Small-pox in the United States.

The remarkable recrudescence of small-pox in the United States which commenced about two years ago shows but little signs of abating. The disease is prevalent in almost every part of the country. The causes of this long protracted epidemic are attributed partly to returning soldiers from Cuba and the Philippines—the latter islands being a constant home of the disease—and to the laxness with which preventive and repressive measures have been, and are still, carried out. Vaccination in particular has been allowed in many parts of America to fall into something approaching desuetude, or rather, perhaps, it may be said to have been performed in a somewhat perfunctory manner.

The type of the disease throughout the epidemic has been mild—that is, the mortality has been extremely low, being estimated at 1 or 0·5 per cent. Of course, the mildness of the cases has added to the difficulty of dealing effectively with the epidemic. Stringent measures of quarantine have been neglected. There is no doubt that if the community does not come to a realisation of the value of vaccination the epidemic is certain to spread. No confidence can be placed in the continuance of the present low mortality The assumption that the germ in the present outbreak is of lessened virulence constitutes no sound foundation for the belief that this condition will endure. A tropical climate may have weakened the virulence of the germ, but under altered conditions it may again acquire its ordinary deadly properties. There is thus the probability that unless measures are enforced to stamp out or to check the epidemic the disease will not only spread in the future but there will be a great increase in the mortality.

Typhoid Fever in Brooklyn

There is a prevalence of typhoid fever in Brooklyn which though it can scarcely be termed an epidemic is an outbreak of far greater proportions than the average for this season of the year. At the time of writing there have been 143 cases of typhoid fever reported in the month in Brooklyn against 72 for the corresponding period last year. The death-rate during this month reached 34 per 1000, which is a high rate of mortality. It is said that many cases are not reported to the Board of Health. The interesting point with regard to the present outbreak is that it is believed to be due to contamination of the water by means of soldiers who were stationed in the centre of Brooklyn's watershed at the commencement of the Spanish-American war. The theory is that the poison has been in the soil since 1898 and as this year there has been a very heavy rainfall the rain has carried the germs of the disease into the water-supply by natural methods. The Hempstead watershed—the camp having been at Hempstead—contains a large number of wells bringing the water-supply to Brooklyn.

ct. 1st.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Health of Sydney.

Mr. T. Mailler Kendall, medical adviser to the Sydney Water and Sewerage Board, has submitted his report for the quarter ending June 30th. The period had been exceptionally dry; only 4·50 inches of rain had fallen on the metropolitan area, or 8·64 inches less than during the corresponding quarter of the previous year. The highest temperature (80·1° F.) was registered on April 14th and the lowest (42·3° F.) on June 29th. The total death-rate for the quarter showed a decrease as compared with that for the same quarter of the preceding year, and although the mortality due to diarrhœa had increased by nearly one-half and that from phthisis had increased by 11, still the mortality from diphtheria and typhoid fever had been greatly decreased, the former by one-half and the latter by more than that amount. The increased mortality from diarrhœa was due to some extent to the dryness of the season and the shortage of the water-supply which prevented street scavenging being carried out in the systematic manner that was necessary for the health of the community. The pulverised street dust, which contained Klein's bacillus, might have proved a factor in that direction, and the dryness of the season probably influenced the temperature of the earth at a depth of four feet, as the temperature at that depth had an intimate relation with the incidence of diarrhœa. 150 cases of diphtheria were reported during the quarter, with a mortality of 8 per cent. The mortality from phthisis during the quarter had been greater than it had been for any similar quarter during the last six years. Notwithstanding the advantages which had been gained from the drying of the soil by the laying of deep sewers, many of the factors of the disease had been maintained in their action through apathy and neglect. Insufficient ventilation and insufficient cubic space encouraged the growth of the bacilli of the disease. Expired air contained certain organisms which diffused sluggishly through the air of a room, and consequently, unless sufficient fresh air was supplied, the inmates had to suffer, for no matter how large a bedroom might be it did not contain sufficient air for the purification of expired air during the hours of sleep. It was therefore useless to provide people with complete sanitary systems if they persisted in poisoning the air they had to breathe during the hours of sleep. The largest number of deaths occurred at the age of 23 years; four occurred at from one to 10 years, 11 from 11 to 19 years, 24 from 20 to 24 years, 41 from 20 to 29 years, 35 from 30 to 39 years, 27 from 40 to 49 years, 15 from 50 to 59 years, and 13 from 60 to 69 years. A decrease in the number of cases of typhoid fever was also reported. By the compulsory system of notification the board early became acquainted with the locality of each case and it was enabled to take measures to remedy any faulty sanitary fittings and to advise the various councils of all such sanitary faults as were existing within the districts under their jurisdiction. During the past quarter 195 cases were reported. Of the reported cases 78·9 per cent. came from dwellings having no sewerage, remaining unconnected with existing sewers, or having faulty sanitary fittings, and 20 per cent. came from houses in which the regulations of the board as to sanitary fittings were satisfied; 34·3 per cent. of the total number came from places where no system of sewerage had been installed.

Bubonic Plague.

The bubonic plague has died out in all the States except Queensland, where a fatal case occurred at Gladstone.

Dentists Act Amendment Bill.

The second reading of the Dentists Act Amendment Bill has passed the Legislative Council of New South Wales. The Dentists Act has been in force for two years and 958 dentists had been registered under its provisions, and the present Bill was found necessary by the Dental Board for the true and proper working of the Act. An endeavour was made in the Bill to define more clearly what was misconduct in regard to dental practice and there was a provision to prevent practitioners from putting after their names any misleading or false letters, words, or credentials, which provision was as necessary as in regard to the medical profession. Cases had come before the courts of unqualified persons calling themselves Chinese or French dentists and they could not be prevented from misleading the public by such designations. There were clauses which aimed at preventing dentists from carrying on business under the style of a firm and thereby employing incompetent persons who were not registered. The Bill provided for annual registration, so that the names of those who had removed from the State might be erased, instead of being continually repeated. It was furthermore proposed to give the board power to appoint outside examiners.

Disease and Overcrowding on Transports: Commission of Inquiry.

When the transport *Norfolk*, conveying home the 2nd Battalion of the Australian Commonwealth Horse from South Africa, arrived at Adelaide on August 2nd, the medical officers requested that a Victorian trooper who was suffering from appendicitis should be landed and sent to hospital as he might require immediate operation. The health officer of Adelaide, Dr. Ramsay Smith, however, refused to allow the patient to be landed and he went on in the transport. Between Adelaide and Melbourne the man got so much worse that the medical officers, Captain Jermyn and Lieutenant Barnard, decided that immediate operation was imperative. Accordingly, at 2 A.M., in a heavy gale making the ship roll so much that the patient had to be strapped to the operating-table to keep him on it and with a minimum of appliances and assistance, Captain Jermyn operated. He found that the appendix had perforated and that peritonitis had set in. On reaching Melbourne the patient was conveyed to the Melbourne Hospital where he is making a satisfactory recovery. —When the transport *Drayton Grange* arrived at Albany with some 2000 returning Australian troopers it was reported that measles, influenza, and other diseases had affected a large number of the men, and the medical officer in charge (Captain Shields) advised that the sick men should be landed at Albany. The authorities, however, did not permit this to be done. On the voyage from Albany to Melbourne several patients died and others became seriously ill. It is alleged that the vessel was overcrowded, that the hospital accommodation on board was insufficient with no provision for isolation of infectious cases, that the supply of medicines was insufficient, and that the medical officers were too few and overworked. A Royal Commission has been appointed

to investigate these allegations and has already taken a large amount of evidence.

Hospital Affairs.

The difficulties at the Women's Hospital, Melbourne, are gradually clearing up. After repeated advertisements the committee received applications for the position of resident medical officer and appointed Dr. J. M'Naughton. The annual meeting of subscribers to the institution proved a very contentious one. Mr. M. U. O'Sullivan, the chairman of the medical staff, moved :—

That this meeting desires that in future the committee adopt the advice of the honorary medical staff on all professional matters.

He said that the committee had flouted the advice of the staff hitherto and he charged it with distinct mismanagement. Dr. R. H. J. Fetherston, who seconded the motion, gave specific instances of interference by members of the committee in the treatment of patients and of refusal to comply with the requests of the staff, and said that it was impossible for the staff and the committee to work together. Mr. Madden, on behalf of the committee, replied that three-quarters of the matters the staff had asked for could not be done for want of funds and not because the committee wished to flout the staff. Whenever reasonable requests had been made the committee had respected them. The committee had no personal interests to serve. Could the staff view the position in the same dispassionate way? They were all engaged in large practices. If septicæmia came into the hospital the staff might possibly try to suppress the knowledge of infection. At this statement the meeting became disorganised and refused to hear the speaker. Mr. O'Sullivan's motion was amended to "shall seek the advice of the medical staff" and was carried in that form. At the election of members of the committee the staff put forward a number of representatives and scored a complete victory by securing their return against the old members. The committee has since requested the Premier to appoint a county-court judge to investigate the charges made by the medical staff at the annual meeting.—The committee of the Melbourne Hospital has resolved to invite competitive plans throughout the world for the erection on the present site of a modern hospital with accommodation for 500 beds and to offer prizes of £250 for the best and £100 for the second best plan. The idea is to rebuild gradually on a definite plan.—Sir T. N. Fitz-Gerald has resigned his position as surgeon to the Melbourne Hospital and has been appointed consulting surgeon. Dr. W. Moore has been appointed by the committee to the vacancy.—The report submitted to the thirty-third annual meeting of the Melbourne Hospital for Sick Children showed that the number of in-patients during the year had increased from 1161 to 1287, whilst a corresponding increase in the out-patient department had also occurred, the number of individual cases treated being 10,930, and the attendance of out-patients reached the very high figure of 67,493. The number of inmates treated and restored to health at the convalescent cottage was 222. It is intended to set apart a ward in the Princess May pavilion for infants, thus supplying a long-felt want and also giving the nurses an opportunity of studying the care and management of infants.—The managers of the Alfred Hospital, Melbourne, have adopted new rules concerning the honorary medical staff, providing for a five years' tenure of office and election in rotation. Lots were drawn to determine which members of the staff were to retire. Mr. W. H. Embling has resigned the position of physician and was tendered a complimentary dinner by his colleagues on the staff. The vacancy has not yet been filled.—It has been alleged that the Albury Hospital, New South Wales, is unsuited for the purpose and is in a septic condition. Dr. O'Shaughnessy states that a case of septicæmia was refused admission because there was another septic case in the hospital and not on account of the condition of the building, which is satisfactory.—At the Gundagai Hospital, New South Wales, trouble has arisen between the committee and the nurses, resulting in the resignation of the matron and a nurse. They accuse the committee of too much interference in the treatment of the patients.

Alleged Wrongful Dismissal of a Medical Man.

Reference has previously been made to an action tried in June last, in which Dr. John Kruegar Kelmar recovered compensation for alleged wrongful dismissal from the Wyalong Hospital. The defendant appealed to the Supreme Court for a rule absolute to set aside the verdict, on the ground of wrong direction by the judge. The Supreme Court held that the judge had misdirected the jury and that the case must go down for a new trial.

The late Dr. Milford.

The death of Dr. Frederick Milford, which took place on August 1st last, removes one of the oldest and best known surgeons in Sydney. He was the son of Mr. Justice Milford who in the early days of New South Wales held the important position of Chief Judge in the Equity jurisdiction of the Supreme Court. Dr. Milford was born in England, but came out to Australia with his family when very young. His early education was entrusted to the masters at the Sydney College, but later he returned to the older world and continued his studies in the profession of medicine in Germany and afterwards in London. His qualifications were M.D. Heidelberg and Sydney, M.R.C.S. Eng. (1856), and L.R.C.P. Lond. (1860). Returning to Australia he proceeded to practise his profession in Sydney and almost at once took up a leading position amongst the local faculty. He was surgeon to St. Vincent's Hospital, lecturer on surgery at the Sydney University, and editor of the medical newspaper which was afterwards supplanted by the *Australian Medical Gazette*. At one time he was commodore of the Prince Alfred Yacht Club and an honorary life member of the Royal Sydney Yacht Squadron and the Prince Alfred Yacht Club. It is, however, five or six years since he took an active interest in aquatic matters. Dr. Milford first owned the 16-foot *Young Jack*. Afterwards he was the possessor of the yacht *Doris* which he sailed from Sydney to Melbourne and back after having won several events in Victoria. He next built and sailed the *Sao* and was later the owner of the *Isca*. Until a little while ago Dr. Milford was surgeon captain to the National Guard. He died from valvular disease of the heart at the age of 70 years, respected by a large circle of friends.

Sept. 4th.

Obituary.

BAREND JOSEPH STOKVIS, M.D., LL.D.,

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF AMSTERDAM.

THE sudden and unexpected death of this distinguished physician on Sept. 29th has caused a profound emotion amongst his numerous friends and pupils in many parts of Europe. He was actively engaged in work to the last hours of his life, and Amsterdam, the seat of his birth in 1834, furnished the field of his labours throughout his career. He was made a professor in the University in 1877. In 1881 he became personally known in London while taking part in the International Medical Congress. He was a prolific author and first became recognised as an original investigator by his work on Pathology, published in French, a book now out of print. The subject of albuminuria attracted much of his attention and he published several valuable papers on it, the last being communicated in 1901 to the Congress of Life Assurance Medical Officers which met at The Hague. His papers on Urinary Pathology, Urinary Pigments, and Morbid Conditions of the Blood were all of great value and were recognised as classical and authoritative by all students of these subjects. He was one of the founders of *Janus*, a journal devoted to the history and geography of medicine. His *magnum opus* was "Leçons de Pharmacothérapie," a commanding series of three volumes the last of which received his finishing touches so lately as July of this year. Translations of these appeared in French as fast as they were published in Dutch. On the day preceding his death he corrected the proofs of an experimental research which he had dedicated to Professor von Leyden of Berlin in the *Festschrift* arranged for the jubilee of that clinician, the subject being "Methæmoglobinæmia et Enteritis Parasitaria." He enjoyed a considerable consulting practice throughout Holland and was physician to one of the largest life insurance offices in that country. He was the recipient of some of the highest decorations in the Netherlands and Portugal. His profound interest in physiology kept him in active sympathy and frequent correspondence with most of the original investigators in all countries, and his advice and opinions were eagerly sought by them. He was constantly at work himself, encouraging and stimulating successions of his pupils in physiological and clinical researches.

Professor Stokvis was one of the brightest and most interesting medical personages in Europe and was commonly regarded as the most eminent physician in Holland. Few men enjoyed a wider reputation or a more affectionate regard amongst the leaders of medicine on the continent. He was a man of untiring energy and mental activity and was keenly set on the advance of our art from its scientific sides. He was satisfied with nothing less than accuracy and the exposition of the whole truth when it was possible to wrest it from nature. With this habit of mind were blended the most simple and child-like guilelessness, an intense love of nature, and an unfailing flow of good spirits which spread their happy infection around him. To lose such a man from the ranks of scientific medicine is, indeed, to suffer a grievous loss. No figure was better known or welcomed at most of the great medical congresses in recent years in which he took an active part. He was a great reader and had the easy command of five or six languages. His mind was open, tolerant, and appreciative, and his sympathies and affections were wide. The news of his death came with a painful shock, for he had spent more than a week in the south of Ireland in apparently good health only 18 days before he passed away. He greatly enjoyed the rest, seclusion, and the beautiful scenery which this sojourn afforded him. He left to attend a congress in Brussels and fortunately reached his home some days before he was called away. He was much grieved to learn the news of Virchow's death and he lost in him one of his oldest and most attached friends. As Rector Magnificus of the University of Amsterdam he attended the tercentenary festivals of the Universities of Edinburgh and Dublin, receiving the degree of LL.D. from the former in 1884. At his death he had just completed his sixty-eighth year. The loss of his wife early in this year was a severe trial to him. He was buried in the Jewish cemetery, near Amsterdam, on Oct. 1st.

It is to be hoped that the best of the works of Professor Stokvis will be soon collected and published as a worthy and enduring memorial of one of the most genial and brilliant men who have graced our profession in recent times. "*Exstinctus amabitur idem.*"

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. F. Rubio, a well-known Spanish surgeon, at the age of 75 years.—Dr. Broes van Doert, an eminent Amsterdam dermatologist.—Dr. Albert Graefe, a well-known Berlin ophthalmologist, who was related to Albrecht von Graefe as well as to the late Alfred Graefe of Halle. He died in the Tyrol from pleuro-pneumonia, his age being only 42 years.—Dr. Brunelle, Professor of Surgery in the Laval University, Montreal.—Dr. Alcina y Rancé, Professor of Therapeutics in the Cadiz Medical School.—Dr. Leo Kaplan, of the Herzberge Lunatic Asylum, whose numerous papers on the histology of nervous diseases are well known.—Dr. Josef Bergson of Berlin, at the age of 89 years. He was one of the earlier writers on general anæsthesia.—Dr. Karl Ewald Hasse of Hanover, at the age of 92 years, formerly Professor of Medicine in Göttingen. His published works include an autobiography written quite recently.—Dr. Friedenwald, Professor of Ophthalmology, &c., in the College of Physicians and Surgeons, Baltimore.—Dr. Josef Unterlugauer, formerly Director of the Sanitary and Medical Services of Bosnia and the Herzegovina.—Dr. van Hasselt, formerly Inspector-General of the Medical Department of the Dutch army.—Dr. Switalski, *privat-docent* of Midwifery in Warsaw.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At the Primary Examination the following candidates passed in the subjects indicated:—

PART I.

Biology.—F. M. Cunningham, Royal Free Hospital; and R. J. W. McKane, Leeds.
Chemistry.—P. A. Sullivan, Birmingham.
Materia Medica and Pharmacy.—C. E. Adams, Guy's Hospital; and C. E. Pring, Royal Free Hospital.

PART II.

Anatomy.—H. M. Langdale, Guy's Hospital; W. S. Mitchell, St. Mary's Hospital; and E. Moir, Manchester Medical School.
Physiology.—C. Homer, St. Mary's Hospital and Bristol Medical School; W. S. Mitchell, St. Mary's Hospital; S. K. Poole, Guy's Hospital; and J. W. Rollings, University College Hospital.

UNIVERSITY OF DURHAM.—At the Convocation held on Sept. 27th the following degrees and diploma were conferred:—

Doctor in Medicine.—Christopher Osmond Bodman, M.B., B.S. Durh.; Philip Boobbyer, M.B., M.S. Durh.; Sidney Herbert Hawley, M.B. Durh.; Henry Smurthwaite, M.B., B.S. Durh.; Harold Robert Dacre Spitta, M.B., B.S. Durh.; Joseph Briscoe Stephenson, M.B., B.S. Durh.; Sydney Duke Turner, M.B., B.S. Durh.; and John Charles Velenski, M.B., B.S. Durh.

Doctor in Medicine for Practitioners of 15 Years' Standing.—George Alfred Edsell, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A.; Ernest Henry Ellison, M.A., M.R.C.S. Eng., L.R.C.P. Lond., L.S.A.; George William Henry French, F.R.C.S. Eng.; John Harley Gough, M.R.C.S. Eng., L.R.C.P. Lond., F.R.C.S. Edin.; George Frank Angelo Harris, M.R.C.S. Eng., M.R.C.P. Lond.; Hillyard William Haydon, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A.; John Arnallt Jones, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A.; John Edward London, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A.; Alfred Ernest William Ramsbottom, L.R.C.S. Irel., L.M.; William Langford Symes, L.R.C.S., F.R.C.P. Irel., L.M.; Onslow Arthur Wickham, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A.; and Lionel Henry Williams, M.R.C.S. Eng., L.S.A.

Bachelor in Medicine (M.B.).—Reginald Bigg, M.R.C.S. Eng., L.R.C.P. Lond., St. Bartholomew's Hospital; Anthony Bourchier Bradford, St. Thomas's Hospital; Annie Tombleson Brunyate, London School of Medicine for Women; John Cooper, B.Sc., College of Medicine, Newcastle-upon-Tyne; Ida Emilie Fox, London School of Medicine for Women; James William Gibson, George Mack, and Leonard Clark Newton, College of Medicine, Newcastle-upon-Tyne; Monica Lucien Mary Robertson, London School of Medicine for Women; Thomas Corrie Rutherfoord, M.R.C.S., L.R.C.P., St. Thomas's Hospital; Gayton Warwick Smith, M.R.C.S., L.R.C.P., Guy's Hospital; Basil Edward Spurgin, College of Medicine, Newcastle-upon-Tyne; Charles Ravenscroft Stewart, St. George's Hospital; and James Bowden Waters, Frederick George Wilson, and Robert Younger, College of Medicine, Newcastle-upon-Tyne.

Bachelor in Surgery (B.S.).—Reginald Bigg, M.R.C.S. Eng., L.R.C.P. Lond., St. Bartholomew's Hospital; Anthony Bourchier Bradford, St. Thomas's Hospital; Annie Tombleson Brunyate, London School of Medicine for Women; John Cooper, B.Sc., College of Medicine, Newcastle-upon-Tyne; Ida Emilie Fox, London School of Medicine for Women; James William Gibson, George Mack, and Leonard Clark Newton, College of Medicine, Newcastle-upon-Tyne; Monica Lucien Mary Robertson, London School of Medicine for Women; Thomas Corrie Rutherfoord, M.R.C.S., L.R.C.P., St. Thomas's Hospital; Gayton Warwick Smith, M.R.C.S., L.R.C.P., Guy's Hospital; Basil Edward Spurgin, College of Medicine, Newcastle-upon-Tyne; Charles Ravenscroft Stewart, St. George's Hospital; and James Bowden Waters, Frederick George Wilson, and Robert Younger, College of Medicine, Newcastle-upon-Tyne.

Bachelor in Hygiene (B.Hy.).—Emmeline Da Cunha, L.M. and S. degree, Bombay University; and Esther Molyneux Stuart, M.B., C.M. Edin.

Diploma in Public Health (D.P.H.).—Esther Molyneux Stuart, M.B., C.M. Edin.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* It has been stated that Professor Gerhardt's successor is likely to be Professor von Jaksch of Prague, and Dr. Marchand of Leipsic is expected to be appointed to Professor Virchow's chair, according to one account; according to our Berlin correspondent, however, Professor Virchow's successor is to be Professor Orth of Göttingen. Dr. K. A. Passow of Heidelberg has been appointed to a professorship of Otology.—*Bologna:* Dr. P. L. Rosellini has been recognised as *privat-docent* of Dermatology. Dr. Severo Bianchini has been recognised as *privat-docent* of Medical Pathology.—*Cadiz:* Dr. Juan Luis Hohr y Rodriguez has been appointed Professor of Therapeutics.—*Copenhagen:* Dr. E. Ehlers has been promoted to a professorship of Dermatology.—*Jena:* Dr. Ernst Hertel, *privat-docent* of Ophthalmology, has been promoted to an extraordinary professorship.—*Kiel:* Dr. R. Ruge has been recognised as *privat-docent* of the History of Medicine.—*Leipsic:* Professor Chiari of Prague has been appointed to the chair of Pathological Anatomy; Dr. J. H. Rille of Innsbruck has been offered the chair of Dermatology.—*Moscow:* Dr. S. Chervinski of Iurieff has been appointed Extraordinary Professor of Pharmacology.—*Munich:* Dr. Fritz-Voit has been promoted to an Extraordinary Professorship of Medicine and Dr. Karl Seitz to an Extraordinary Professorship of Pædiatry. Professor Bumm has been entrusted with the charge of the New University Clinic for Mental Diseases; Dr. Kattwinkel has been recognised as *privat-docent* of Internal Medicine.—*Naples:* Dr. Simonelli has been recognised as *privat-docent* of Medical Pathology. Dr. L. D'Amato has been recognised as *privat-docent* of Medical Pathology. *Pisa:* Dr. P. Fiori has been recognised as *privat-docent* of Surgical Pathology.—*Prague (German University):* Dr. W. Anton has been recognised as *privat-docent* of Otology and Rhinology; (*Bohemian University*) Dr. Karl Vymola has been recognised as *privat-docent* of Otology and Rhinology.—*Rome:* Dr. Rufino Fiocca has been recognised as *privat-docent* of

Medical Pathology; Dr. F. S. Rocchi as *privat-docent* of Midwifery and Gynæcology; and Dr. Antonio Parrozzani has been recognised as *privat-docent* of Surgical Pathology.—*Santiago:* Dr. Victor Escribano Garcia has been appointed Professor of Topographical Anatomy.—*St. Petersburg (Military Medico-Chirurgical Academy):* Dr. Korovin and Dr. Maximoff have been recognised as *privat-docenten* of Pathological Anatomy.—*Turin:* Dr. Allgeyer has been recognised as *privat-docent* of Dermatology.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—The first entrance scholarship in natural science (150 guineas) has been awarded to Mr. Henry John Nightingale and the second (of the value of £60) to Mr. Alfred Charles Foster Turner. The University scholarship (of the value of £50) has been awarded to Mr. Henry Roy Dean of New College, Oxford.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A special general meeting of this society will be held at the Midland Hotel, Bradford, on Wednesday, Oct. 15th, at 6 P.M., when Dr. J. F. Goodhart, consulting physician to Guy's Hospital, will give an address entitled "Round about Constipation." The meeting will be followed by a dinner at 7.15 P.M.

THE WEST SUFFOLK GENERAL HOSPITAL, BURY ST. EDMUNDS.—Bury St. Edmunds is well known to all antiquarians as still exhibiting in the twentieth century, chiefly on account of the magnificent remains of its wealthy abbey, many of the structural features of a mediæval city. Circumstances, the development of trade, the position of agriculture, the situation of early railways, have somewhat conspired to keep Bury behind in the modern race for prosperity, but it is quite clear that those responsible for the management of the Suffolk General Hospital do not intend to be content with anything but the most modern equipment of their excellent charity. There is to be nothing mediæval, or ill-attuned to the twentieth century, about the hospital. A recent and unexpected legacy having placed a substantial sum of money at the disposal of the hospital, which makes up over 60 beds and caters for a large rural district, it has been decided by those in authority to spend a certain proportion of the windfall upon the interior of the building and, in particular, upon a new and perfectly appointed operating-theatre. Mr. Percy Adams is responsible for the design of this theatre, the work having been carried out in accordance with the suggestions of the surgical staff. Considerable structural alterations were required and the difficulties of pulling the building about have been well surmounted. The old operating-theatre, though it had a very good light, was really nothing more than an annexe leading into a passage. This annexe, in addition to being at one end a thoroughfare, was enormously lofty, and in its wooden floor a trap-door opened by which the patients were brought up from the wards below. It will be gathered from this brief description that such a place could not, by any possible means, be made into a modern operating-theatre—no conceivable alterations could make a place, so liable to accidental contaminations and so impossible to keep free from accumulating dust and dirt, into a proper theatre for modern surgical operations. Rebuilding became necessary and the new operating-theatre has been built at the back of the hospital upon the first floor of the building, with a large room below it which is used as a recreation-room for the nurses. The passage which used to traverse the operating-theatre now leads to the door of a suite of rooms composed of a surgeons'-room, an anæsthetising-room, and an operating-theatre proper. The work in the operating-theatre has been carried out in white and green tiles; all the furniture is of modern type and the best workmanship, and the total cost of the improvements is something over £2500. We congratulate the hospital authorities upon boldly facing the situation and spending the money necessary to bring their institution into line with modern requirements. A new operating theatre was urgently required and they have done wisely to make their structural reform complete. The neighbourhood will, we trust, endeavour to make good the annual difference of some £200 or so between the income and expenditure of the charity. The possession of a well-managed, well-equipped, well-staffed hospital is an extraordinary advantage to both the town and the vicinity, and the residents of West Suffolk might well mark their sense of the sound action of the executive in thoroughly improving the hospital by increasing their subscriptions until the yearly deficit no longer exists. The approaching ceremony of declaring the new operating theatre open will be a fitting opportunity for the giving of donations and the commencement of annual subscriptions.

DEMONSTRATIONS ON MEDICAL ELECTRICITY IN PARIS.—Dr. Laquerriere, director of the hospital under Dr. Apostoli's charge, and Dr. Louis Delherm will give twelve practical demonstrations on Medical Electricity in November and December, 1902. A similar series will take place in June and July, 1903. Particulars can be obtained by applying at the hospital, 19, rue Montmartre, Paris.

THERAPEUTICAL SOCIETY.—A meeting of the council of this society was held at the Apothecaries' Hall on Sept. 30th, Sir W. Thiselton-Dyer being in the chair. 24 gentlemen were admitted to the fellowship of the society and it was resolved that the first meeting should take place in January, 1903, instead of in October, 1902. The subscription to the society was determined to be half a guinea a year and all duly qualified medical men are admissible to the fellowship as well as other persons as are interested in therapeutics.

VACCINATION IN LEICESTER.—At the last meeting of the Leicester board of guardians the clerk presented the vaccination returns for the years 1900 and 1901, from which it appeared that out of 6206 births registered in the borough during the year 1900 only 315 children were successfully vaccinated, whilst two were insusceptible, 1002 died unvaccinated, 45 were removed to other districts known to the vaccination officer, 1693 were removed and not found, 265 were postponed by medical certificate, 109 were vaccinated by the public vaccinator, and 466 were vaccinated irrespectively of date of birth. During 1901 the number of successful vaccinations was 483.

DURHAM UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—The annual meeting of this association was held on Sept. 27th, after convocation, in the common room of University College, Durham. There was a good muster of members and the proceedings were characterised by much cordiality. The President of the association, Dr. Frederick S. Palmer, occupied the chair. The honorary treasurer, Dr. S. W. Plummer, read the financial statement for the year, showing that the finances of the association were in a flourishing condition, the income exceeding the expenditure, and that there was a substantial balance at the banker's. The following were elected on the council for the coming year:—President: Dr. W. D. Arnison. Vice-Presidents: Dr. J. W. Hembrough and Dr. Frederick Spicer. Council: Dr. Charles Blair, Dr. T. Beattie, Dr. R. A. Bolam, Dr. Charles W. Chapman, Dr. A. Cox, Dr. W. M. Davson, Dr. E. W. Diver, Dr. J. Eyre, Dr. Percy Jakins, Dr. J. T. James, Dr. Henry Smith, and Dr. W. G. Richardson. Honorary secretaries: Mr. H. B. Angus and Dr. T. Outterson Wood. Honorary treasurer: Dr. S. W. Plummer. The retiring President then, in a few well-chosen remarks, inducted his successor, Dr. Arnison, into the chair and the usual routine business having been transacted the meeting closed with a hearty vote of thanks to the College authorities for the use of the room. In the evening the members dined together in the fine old hall of University College. Dr. Arnison occupied the chair and was supported by the Master of University College, the Rev. Dr. Gee; the Principal of Hatfield Hall, the Rev. Dr. Jevons; Sir George Hare Philipson; Mr. W. K. Hilton, the Bursar, University College; Dr. Palmer, Dr. Lyle, Dr. Scudamore Powell, Mr. Angus, and others. The usual patriotic toasts were given by the chairman and Dr. Palmer proposed "The University of Durham"; Dr. Gee replied and heartily welcomed the association. Dr. Jevons proposed "The Durham University Medical Graduates' Association" and Dr. Outterson Wood, honorary secretary for the south, replied. The dinner throughout was a signal success; the tables spread in the classic hall of the old castle were bright with the fine old silver plate for which University College is famed, and a profusion of beautiful flowers in "palatinate purple," the colours of the College, added a charming effect. The thanks of the association are due to Dr. Gee, the new Master of University College, and the authorities for the excellent facilities they afforded for the meeting and dinner, and especially to Dr. Plummer for all the trouble he took to make the dinner so enjoyable. The pleasure of the

occasion was much added to by the music provided by members of the Cathedral choir.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number

ARMOUR, DONALD JOHN, M.B., M.R.C.P Lond., F.R.C S. Eng., has been appointed Honorary Surgeon to the St. Marylebone General Dispensary.

BEATTY, J., M.D. Dubl., has been appointed Medical Officer of Health for the Borough of Northampton.

BENNETT, THOMAS, L.R.C.S. Irel., has been appointed Public Vaccinator for Foxton, New Zealand.

BLUETT, PETER FREDERICK WILLIAM, L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Public Vaccinator for Rakaia, New Zealand.

BOND, JOSEPH HENRY, L.R.C.S. Irel.,, has been appointed Public Vaccinator for the District of Thames, New Zealand.

BRIGGS, WALTER, M.B., Ch B. Vict , has been appointed Junior House Surgeon to the Blackburn and East Lancashire Infirmary.

BRODRICK, C. C., L.R.C.P., L.R.C.S. Edin., has been re-appointed Medical Officer of Health to the Tavistock Rural District Council.

BROWN, G. A., M.R.C.S., L.S.A , has been re-appointed Medical Officer of Health to the Tredegar Urban District Council.

BULL, H. A., M.R.C.S., L.R.C.P , has been appointed Medical Officer for the Colwick Division of the Stafford Union.

FARRANT, M., M.R.C.S., L.R.C.P. Lond., has been re-appointed Medical Officer of Health to the St. Thomas Rural District Council, Exeter.

FITZGERALD, WILLIAM, M.B. Edin., has been appointed Public Vaccinator for Granity, New Zealand.

FLACK, FREDERICK H., M.B., Ch.B. Vict., has been appointed Senior House Surgeon to the Blackburn and East Lancashire Infirmary.

FLEMING, WILLIAM ALEXANDER, M.B., Ch.M. Edin., has been appointed Public Vaccinator for the District of Balclutha, New Zealand.

FORMAN, B. G., M.B., B.S. Edin., has been appointed District Medical Officer for the Union of Scarborough.

FULLERTON, ANDREW, M.D., B.Ch., F.R.C.S. Irel., has been appointed Honorary Assistant Surgeon to Royal Victoria Hospital, Belfast.

HARNETT, CHARLES JOHN, M.D. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Surgeon and Agent to the Admiralty at Margate.

HILL, ABRAM J., M.D. Lond., M.R.C.P. has been appointed Honorary Physician to the Royal Infirmary, Liverpool.

LYTH, H. A., M.R.C.S., L.R.C.P., has been appointed Assistant House Surgeon to the Rotherham Hospital and Dispensary.

MARSTON, F. E., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health to the Welshpool Corporation.

MCCLELAND, HUGH AUGUSTUS, M.R.C.S., L.R.C.P. Lond., has been appointed Public Vaccinator for the District of New Plymouth, New Zealand.

MORKANE, MICHAEL CHARLES FREDERICK, M.B., Ch.B. Univ. N.Z., has been appointed Public Vaccinator for Ross, New Zealand.

OKELL, GEORGE, jun., L.R.C.P. Irel., has been appointed Certifying Surgeon under the Factory Act for the Winsford District of the County of Chester.

PERCEVAL, MONTAGUE WILLIAM CAIRNS, Lic. and Lic. Midwif., K. & Q.C.P. Irel., has been appointed Public Vaccinator for Patea, New Zealand.

POTTS, LAWRENCE, M.R.C.S., L.S.A., has been appointed Medical Officer to the School for the Blind, Leatherhead.

ROBERTS, EDWARD EVANS, M.B., Ch.M. Edin., has been appointed Public Vaccinator for Cambridge, New Zealand.

UTHERLAND, JAMES, M.B., M.S. Edin., has been appointed Public Vaccinator for Tokomairiro, New Zealand.

WILSON, JOHN BERNARD, L.R.C.P. & S. Edin., has been appointed Public Vaccinator for Huntly, New Zealand.

WYLIE, D. S , M.B., Ch.B Vict., has been appointed House Surgeon to St. Peter's Hospital for Stone.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRMINGHAM GENERAL HOSPITAL.—Surgical Casualty Officer. Salary £50 per annum (non-resident).

CARDIFF INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £75 per annum, with board, washing and apartments.

COUNTY LUNATIC ASYLUM, Lancaster.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, &c.

DARENTH ASYLUM, Dartford, Kent.—Assistant Medical Officer, unmarried. Salary £150 per annum, rising to £170, with rations, lodging, &c.

DURHAM COUNTY ASYLUM.—Locum Tenens. Salary 4 guineas weekly, with apartments, board, laundry, and attendance.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN. Shadwell, E.—Assistant Physician; also Pathologist and Registrar. Honorarium of £100. Also Officer for the Electrical Department.

GROVE HALL ASYLUM, Bow, London, E.—Assistant Medical Officer. Salary at rate of £150 a year, with board, apartments, attendance, and washing.

HOSPITAL FOR DISEASES OF THE SKIN.—Honorary Pathologist.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £20, with board and residence.

JENNER INSTITUTE OF PREVENTIVE MEDICINE, Serum Department, Aldenham, Herts.—Assistant Bacteriologist. Salary £200 per annum, with rooms.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100, with board and lodging.

LIVERPOOL STANLEY HOSPITAL.—Honorary Anæsthetist.

LONDON LOCK HOSPITAL, Dean-street, W.—Anæsthetist (male).

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £70 per annum, with board and residence.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST (In-patient Department), Bowdon, Cheshire.—Resident Medical Officer. Salary £100 per annum, with board, apartments, washing, and railway contract to Manchester.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Assistant Surgeon.

MONMOUTHSHIRE ASYLUM, Abergavenny.—Junior Assistant Medical Officer. Salary £150 per annum, increasing to £200, with board, lodging, and washing

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, N.E.—House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and laundry.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician. Also House Surgeon. Both for six months. Salary at rate of 50 guineas a year and board and residence.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with apartments, board, and washing.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.—Demonstrator of Anatomy. Salary £70 per annum.

SEAMEN'S HOSPITAL SOCIETY (*Dreadnought*), Greenwich, S.E.—House Physician (salary £75 per annum); also House Surgeon (salary £50 per annum), both with board, residence, and washing.

SHEFFIELD ROYAL HOSPITAL.—Honorary Anæsthetist.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon. Salary £120 per annum, with board, lodging, and washing.

SHEFFIELD UNIVERSITY COLLEGE (FACULTY OF MEDICINE).—Professor of Physiology. Also Demonstrator in Bacteriology.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Resident Assistant House Surgeon for six months. Salary at rate of £60 per annum, with board, lodging, and laundry.

WESTMINSTER GENERAL DISPENSARY.—Honorary Surgeon.

WINDSOR AND ETON ROYAL DISPENSARY AND INFIRMARY.—House Surgeon, unmarried. Salary £120 per annum, with residence, board, washing, and attendance.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Physician. Salary £100 per annum, with board and lodging.

WOODILEE ASYLUM, Lenzie.—Assistant Medical Officer. Salary £125 per annum, with board, lodging, and washing.

WORCESTERSHIRE CONSUMPTION SANATORIUM.—Resident Medical Officer.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Anahilt, co. Down; at Maidenhead, Berks; at Kilmacthomas, Waterford; at Maynooth, Kildare; at Canterbury, Kent; at Wool, Dorset; and at Fauldhouse, Linlithgow.

Births, Marriages, and Deaths.

BIRTHS

FEGAN.—On Oct. 2nd, at Parkside, Welwyn, Herts, the wife of J. H. C. Fegan, M.R.C.S., L.R.C.P. Lond., of twin daughters.

GOSSAGE.—On Oct. 4th, at Upper Berkeley-street, W., the wife of Alfred M. Gossage, M.B. Oxon., M.R.C.P. Lond., of a daughter.

MARRIAGES.

ENNECCERUS—HOAR.—On Oct. 3rd (the silver wedding day of her parents), at Salehurst Church, Robertsbridge, Sussex, Amy Margaret, only daughter of Charles Hoar, M.B., C.M. Aberd., of Robertsbridge, and grand-daughter of the late Augustus Waller, M.D., F.R.S., to Wilhelm Victor Enneccerus, Senior Lieutenant of the 161st Prussian Infantry Regiment and Adjutant to the Reserve Forces of the Coblenz District, son of Colonel Enneccerus, of Frankfort-on-Main.

SUMPTER—MUSPRATT.—On the 1st Oct., at All Saints Church, Upper Sheringham, by the Rev. W. Muspratt, M.A., brother of the bride, assisted by the Rev. Everett Bishop, rector of Cley, and the Rev. W. Goodwin of Sheringham, Eustace Wyatt Sumpter, M.B., B.S., third son of Walter Sumpter, M.D., Cley, Norfolk, to Edith Muspratt Muspratt, youngest daughter of the late Frederick Muspratt, Esq., J.P., formerly of Seaforth Hall, Liverpool, and Mrs. Muspratt, of La Coterie, Sheringham, and niece of the late Professor Muspratt.

DEATHS.

MACKINTOSH.—On Oct. 5th, at 250, St. Vincent-street, Glasgow, Donald Mackintosh, M.D. Durh., in his 92nd year.

MARMION.—On the 7th Oct., suddenly, at Milton, Sittingbourne, Kent, E. J. Marmion, M.D. Deeply regretted.

VIGURS.—At Newlyn East, Cornwall, on Oct. 6th, Chambre Robert Corker Vigurs, M.R.C.S. & L.S.A., aged 72 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

WHAT IS EXCESSIVE DRINKING?

A REPORT in the issue of the *South London Observer and Camberwell and Peckham Times* of Wednesday, Oct. 1st, tells the story of an extraordinary inquest held by Mr. G. P. Wyatt on the body of a man employed at a well-known mineral-water factory. The deceased went to work as usual in the morning, was brought home in an apoplectic seizure at seven o'clock in the evening, and expired shortly afterwards. The medical man who saw him when he was in the fit, and who made the post-mortem examination, said that the liver and kidneys were diseased through drink and that the cause of death was apoplexy accelerated by drink, and added that, considering the state of the deceased's organs, any exertion would hasten death. A fellow-workman of the deceased said, in answer to questioning, that the deceased was not a heavy drinker but a moderate drinker. He put the amount taken by this moderate drinker at "eight half-pints a day," but subsequently qualified his evidence by saying that the deceased "might have as many as 20 half-pints a day as well as a drop of gin." At this point it might have been thought that there could be no question that the unfortunate deceased had drunk to excess, but a juror came to the rescue of his memory. "Twenty half-pints a day," said the juror, "would not kill a man: I know a man who can take over 40 half-pints a day." The coroner stated some of the known pathological effects of drink without creating at this point much impression. A juror stated that he did not believe that the death was accelerated by drink; that the deceased was not a heavy drinker, for his widow had said that he was not; that a verdict using the words "accelerated by drink" would be a slur on the family; and, generally, that the jury as a whole did not believe the medical evidence. The jury then retired and upon returning gave in a unanimous verdict of Natural death accelerated by over-exertion at work. The coroner pointed out that there had been no evidence as to the deceased having over-exerted himself at work and again attempted to make it clear to the jury that alcohol in large doses constituted a poison the ingestion of which led to degeneration of the blood-vessels, apoplexy, and death. A second medical man in court was then questioned by the foreman of the jury and gave it as his opinion that from what he had heard there could be no doubt that the deceased's death had been accelerated by drink. The foreman then very handsomely offered for his jury to return a verdict of "accelerated by drinking" but repudiated the qualifying word "excessive." The manner in which the jury looked after the memory of the deceased was certainly a novel one.

A WARNING TO MEDICAL MEN.

To the Editors of THE LANCET.

SIRS,—The inclosed has been sent me by the local police with the suggestion that it would be worth while inserting in the medical papers as a warning to medical men.

I am, Sirs, yours faithfully,

G. FRANCIS SMITH, M.R.C.S. Eng., &c.

Watford, Oct. 7th, 1902.

[INCLOSURE.]

"A tall, clean-shaven, well-dressed man, of gentlemanly appearance, aged about 30 years, has visited Watford by train and reported to the station master and police that he had lost his purse containing a considerable sum of money and the return half of his railway ticket to Oldham. He had cards which he presented representing himself to be a medical man in practice in a town in the north and the cards bore the correct name and address of a medical man in practice at the town in question. He visits medical men and others and on this false statement obtains money."

*** We have also received a letter from Mr. Harold Ashton of Oldham, the practitioner whose visiting cards have been used in carrying out these frauds, stating that he knows nothing of the man and has no idea how he obtained the cards.—ED. L.

OLD BOTTLES.

To the Editors of THE LANCET.

SIRS,—I am glad to see from THE LANCET of Sept. 20th, p. 884, that a correspondent has drawn attention, rightly, to a subject of the utmost importance to members of the medical profession. I refer to the use of second-hand bottles in dispensing. During a lengthy experience as locum-tenent in different parts of England I have had opportunities of testifying beyond a doubt that the filthy and dangerous practice is carried on to no small extent. Bottles picked up from ash-pits, middens, and other filthy sources, not to say anything of those that have been used in the sick-rooms of small-pox, typhoid fever, or other patients, or which may have contained greasy or oily nostrums, are, to put it in the mildest form, most undesirable. I wonder what patients would think were they made aware of the facts. I calculate they would seize on an early opportunity to change their medical attendant. Vendors of second-hand bottles, often not too particular in their own habits, absolutely know nothing of sterilisation and I doubt that they have heard of such a thing.

I am, Sirs, yours faithfully,

Sept. 29th, 1902. M.B., C.M.

UNSUSPECTED ANTIQUITY OF A WELL-KNOWN MODERN SEAT OF LEARNING.

IN the *Times* of Oct. 3rd (Literary Supplement, p. 290) it is said of an eminent Anglican prelate: "Wherever his lot was cast his historical spirit never could rest until he had grasped the history of the neighbourhood and its influence on the social fabric of our own and former days. Thus in Northumberland the Borderland tells its secret to him; at Cambridge and at Peterborough the Fenland does the same. ..... From Harvard, where he represented Emmanuel College, the parent society, at the 250th centenary of its descendant, he sent to the *Times* a graphic account of the ceremonies and a suggestive appreciation of their larger import and significance."

WANTED—A HOSPITAL.

To the Editors of THE LANCET.

SIRS,—May I ask through the columns of your valuable journal whether some of your many subscribers would be good enough to suggest any institution for incurables where a male patient of mine is most anxious to be admitted on payment of a small weekly remuneration? The patient is afflicted with paralysis of the lower half of the body secondary to myelitis of the lumbo-sacral portion of the spinal cord. I may mention that he is bed-ridden and suffers also with bedsores. Any information would be greatly appreciated.

I am, Sirs, yours faithfully,

R. E. DE MARTINI, L.R.C.P., L.R.C.S. Edin.

Rankeillor, Holliers-hill, Bexhill, Oct. 8th, 1902.

THE "Y" FUND.

SURGEON-GENERAL H. S. MUIR begs to acknowledge additional subscriptions towards the above Fund from Deputy-Inspector-General G. Saunders, C.B. (retired), Lieutenant-Colonel J. Shearer, D.S.O., I.M.S., Major G. T. Mould, I.M.S., and the following officers of the Royal Army Medical Corps: Major H. M. Adamson Major H. Cockes, Captain C. B. Martin, Captain B. W. Longhurst and Lieutenant S. Boylan Smith. The fund amounts to £598, and will shortly be closed.

J. W.—The discrepancy is more apparent than real. The quantity of air admitted at night through an open window to keep a room aired is limited and can be regulated according to the temperature and moisture of the air and the capacity of the bedroom.

C. A. Z.—The powder forwarded by our correspondent is a root po der of some kind yielding no definite chemical principles. It gives an ash very rich in alkaline carbonates and the starch reaction is greenish, something like that of cubebs.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 9th, 1902.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 a.m.
Oct.	3	30·10	E.	0·04	67	49	44	42	45	Cloudy
,,	4	30·07	S.E.	0·01	64	54	45	44	47	Overcast
,,	5	29·95	N.E.	...	70	48	46	46	47	Overcast
,,	6	29·79	N.E.	...	56	53	47	48	49	Overcast
,,	7	29·78	N.W.	...	69	56	49	49	51	Hazy
,,	8	29·86	N.E.	...	82	59	48	48	50	Hazy
,,	9	29·72	E.	...	22	55	49	52	54	Overcast

During the week marked copies of the following newspapers have been received:—*Glasgow Evening News, Gazetta degli Ospedali e delle Cliniche, Deutsche Medicinische Wochenschrift, New York Medical Journal, Journal of the American Medical Association, Bristol Mercury, Madras Journal, Reading Mercury, Mining Journal, Herefordshire Mercury, Daily Telegraph, Le Progrès Médical, Scientific American, Derbyshire Courier, Surrey Advertiser, Local Government Journal, Rotherham Express, Liverpool Daily Post, Journal of Tropical Medicine, Westminster Gazette, Knowledge, Broad Arrow, Midland Express, Daily Express (Dublin), Yorkshire Mercury, Local Government Chronicle, Sanitary Record, Medical Temperance Review, Guernsey Evening Press, Launceston Weekly News, Birmingham Evening Despatch, &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (13th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.) West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (14th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.).

WEDNESDAY (15th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (16th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square, (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (18th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (13th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8 P.M. General Meeting. 8.30 P.M. Ordinary Meeting. Mr. A. Pearce Gould (President): Opening Address. Mr. J. Bland-Sutton: A Large Ovarian Tumour Secondary to Cancer of the Breast.

WEDNESDAY (15th).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Prof. Rev. T. G. Bonney: Demonstration on Rock Changes in Nature's Laboratory.

THURSDAY (16th).—OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.—4.30 P.M. Mr. H. C. Baldwin: Dislocation of Eyeball through Palpebral Aperture, Reduction, Recovery.—Mr. E. Nettleship: (1) Birth Palsy of Sixth and Seventh Nerves on the Same Side; (2) Recovery of Perfect Vision in a Case of Family Optic Neuritis (Leber's Disease).—Mr. H. A. Lediard: Dermoid Cyst of Orbit causing Complete Dislocation of Eyeball.

HARVEIAN SOCIETY OF LONDON (Stafford Rooms, Titchborne-street, Edgware-road, W.).—Clinical Evening. Cases will be shown by Dr. L. Guthrie, Dr. A. Morison, Mr. Watson Cheyne, Mr. E. Roughton, Mr. R. Johnson, Mr. F. Jaffrey, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (13th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Galloway: Clinique. (Skin.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Edwards: Cases of Urinary Surgery.

TUESDAY (14th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. S. Taylor: Clinique. (Medical.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. S. Taylor: Chlorosis.

WESTMINSTER HOSPITAL (Broad Sanctuary, S.W.).—4.30 P.M. Dr. P. Stewart: Functional and Organic Hemiplegia. (Post-Graduate Clinical Demonstration.)

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury).—3.30 P.M. Dr. Beevor: Cerebral Localisation.

WEDNESDAY (15th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. R. Harrison: Clinique. (Surgical.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Eccles: Surgical Anatomy.

THURSDAY (16th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Treatment of Some Injuries and Emergencies.

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Mr. Kellock: Tubercular Disease of the Knee.

CHARING CROSS HOSPITAL.—4 P.M. Mr. S. Boyd: Demonstration of Surgical Cases. (Post-Graduate Course.)

FRIDAY (17th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Horne: Clinique (Throat.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. S. Tuke: Mental Diseases: General Survey with some Practical Points.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, Cavendish-square, W.).—5.30 P.M. Clinical Cases by Dr. W. Milner Burgess, Dr. F. Deas, &c.

LONDON TEMPERANCE HOSPITAL (Hampstead-road, N.W.).—3 P.M. Dr. Addinsell: Clinical and Gynæcological Demonstration.

SATURDAY (18th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON.—4 P.M. Dr. D. Ferrier: Harveian Oration.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

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